

حمل الآن

مجانا وحصريا

المراجعة رقم (1)

الترم الثاني



Unit 1 Chemical Reaction

Chemical reaction

It is the **breaking up** of bonds in the **reactants** molecules and formation of new bones in the **products molecules** from reaction.

TYPES OF CHEMICAL REACTION

Thermal decomposition reaction

- 1 Some of metal oxides.
- 2 Some of metals hydroxides
- 3 Most of metals carbonate.
- 4 Most of metals sulphate
- 5 Some of metal nitrate.

Substitution reaction

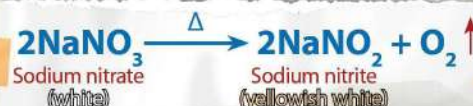
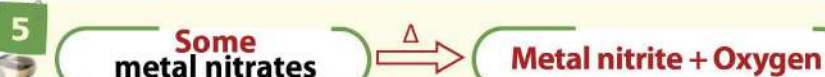
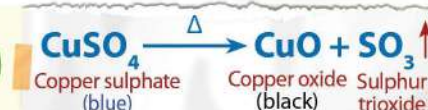
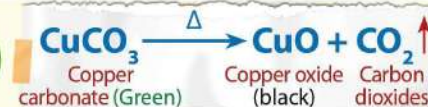
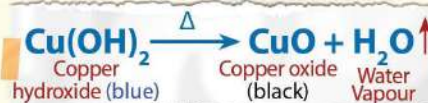
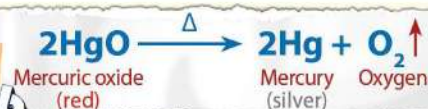
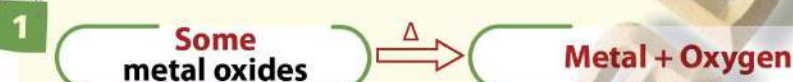
- 1 Simple substitution reactions
 - A) Metal substitutes **H** of water
 - B) Metal substitutes **H** of acid
 - C) Metal substitute another metal
- 2 Double substitution reactions
 - A) Between acid & alkali
 - B) Between acid & salts.
 - C) Between two salts solutions

Oxidation Reduction reaction

Zeinab Yousef

- 1 According to traditional concept
- 2 According to modern concept

A Thermal decomposition reaction



Exercise — Complete the following

Reactants		Products	Examples
Metal oxide	Heat	Metal + Oxygen gas	$\text{Mercuric oxide} \xrightarrow{\Delta} \text{Mercury} + \text{O}_2 \uparrow$
Metal hydroxides	Heat	Metal oxide +	$\text{Cu(OH)}_2 \xrightarrow{\Delta} \text{Copper oxide} + \dots$
Metal	Heat	Metal oxide + carbon dioxide gas	$\text{Copper carbonate} \xrightarrow{\Delta} \dots + \dots$
Metal sulphates	Heat	Metal oxide +	$\dots \xrightarrow{\Delta} \text{CuO} + \text{SO}_3 \uparrow$
Metal nitrates	Heat	 + Oxygen gas	$\dots \xrightarrow{\Delta} 2\text{NaNO}_3 + \dots \uparrow$

Air Bags

- Rapid decomposition occur in crashes to **sodium azide** forming **sodium** and **nitrogen** gas evolves



Science technology



The bag gets inflated by nitrogen gas at an extreme speed (with only 40 mili second) Then it gets vacuumed rapidly to ensure clear vision and proper movement for the driver.



Zeinab Yousef

B Substitution reaction

Substitution reaction

Reactions which depend on the activity of the metals, where the element which is **more active** substitutes (replaces) the **less active** one in its compound.

Chemical activity series (CAS)

Aarrangement of the metals in a **descending** order according to the degree of their chemical activity

The degree of chemical activity decreases

K
Na
Ba
Ca
Mg
Al
Zn
Fe
Sn
Pb
H
Cu
Hg
Ag
Pt
Au

Replace hydrogen

Don't replace hydrogen except under certain conditions

1 Simple Substitution reaction

A) Metal substitutes the hydrogen of water Zeinab Yousef

Active metals above H in CAS

+ Water

Metal replaces H

Metal oxide + H₂↑



Hydrogen gas evolves with pop sound & Heat



B) Metal substitutes the hydrogen of acid

Active metals above H in CAS

+ dil. Acid

Metal replaces H

Salt of acid + H₂↑



Zn & Al before H $\rightsquigarrow$ Can replace H

Cu after H $\rightsquigarrow$ Can't replace H

C) Metal substitutes another metal in its salt solution

Some metals replace another metals that follow them in CAS



Give reason for

1 Copper doesn't react with water.

Because Cu is less active than hydrogen

Zeinab Yousef

2 Although aluminium comes before Zinc in C.A.S. it takes more time than Zn to react with water.

Because aluminium sheets is covered with layer of aluminium oxide which takes time to separate from aluminium.

3 Copper doesn't replace zinc in its salt solutions.

Because Cu is less active than Zn, as it follows Zn in C.A.S

4 Both Magnesium and Zinc can replace copper in copper sulphate solution .

Because both Mg and Zn are more active than Cu, as they come before Cu in C.A.S

5 Don't keep silver nitrate solution in aluminium containers.

Because Al precedes Ag in C.A.S., so it replaces Ag in AgNO₃ leading to eroding of aluminium containers

2 Double Substitution reaction

- They are the reactions which involve double substitution (**exchange**) occurs between the ions of two compounds to give two other new compounds

A) Neutralization reaction

**Reaction of Acid + Base (alkali)
to form Salt + Water**



B) Reaction between acid and salts

Acid + Salts → Product depend
on type of the acid and salt



C) Reaction between two salts solutions

Two salt solutions → precipitate
(doesn't dissolve in water)



C Oxidation reduction reaction

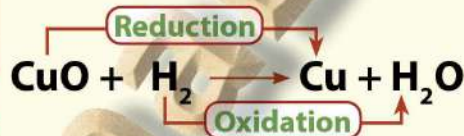
1 Traditional concept

Oxidation

A reaction where oxygen percentage is **increased** or hydrogen percentage is **decreased**

Reducing agent

Substance gains oxygen
or gives hydrogen. $\rightarrow \text{H}_2$



Reduction

A reaction where hydrogen percentage is **increased** or oxygen percentage is **decreased**

Oxidizing agent

Substance gives oxygen
or gains hydrogen $\rightarrow$ Cu

2 Electronic concept

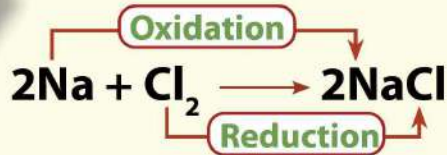
Oxidation

Loss of electrons in a reaction.



Reducing agent

Substance which **lost** **Na**
electrons in a reaction.



Reduction

Gaining of **electrons** in a reaction.



Oxidizing agent

Substance which gains electrons in a reaction.  **Cl**

1 TYPES OF CHEMICAL REACTIONS ACCORDING TO Their speed

1

Very Fast

► **EX** Fireworks

2

Relatively slow

► **EX** Caustic soda (NaOH) to form soap

3

Very slow

► **EX** Rusting of iron

4

Too slow

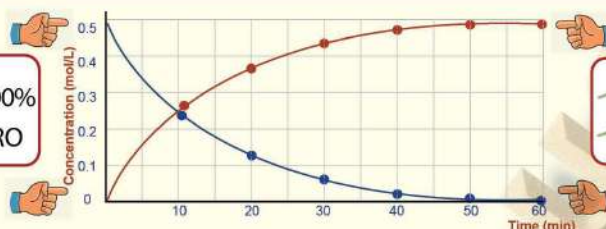
► **EX** Petroleum oil formation

The speed of chemical reaction

It is the change in **concentration** of **reactants** and **products** in a unit time

At Start

- Concentration of **reactants** 100%
- Concentration of **product** ZERO



At End

- Concentration of **product** 100%
- Concentration of **reactants** ZERO

Zeinab Yousef

Example — Decomposition of nitrogen pentoxide N_2O_5

► Nitrogen pentoxide decomposes into nitrogen dioxide and oxygen gas



The table and graph and represent the results of this reaction practically

Time (minutes)	The concentration of the reactants (mole/liter)	The concentration of the products (mole/liter)	
	N_2O_5	NO_2	O_2
0	0.16 (100 %)	Zero	Zero
2	0.08	0.16	0.04
4	0.04	0.24	0.06
8	Zero	0.32 (100 %)	0.32 (100 %)
10	Zero	0.32 (100 %)	0.06 (100 %)

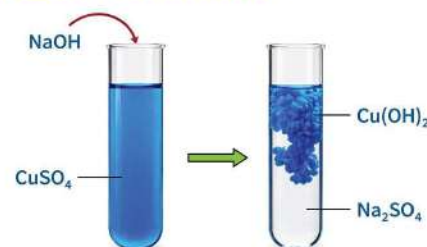
Measuring the speed of the chemical reaction

Zeinab Yousef

- The speed of a chemical reaction can be measured practically by the rate of :
 ⇒ **Disappearance of reactants** Or ⇒ **Appearance of resultants.**



Sodium hydroxide Copper sulphate Sodium sulphate Copper hydroxide
colorless soln. Blue color soln. colorless soln. Blue color ppt



Changing the blue copper sulphate solution into blue ppt. of copper hydroxide.

2 Factors affecting the speed of chemical reactions

1 Nature of reactants

2 Conc. of reactants

3 Reaction temperature

4 Catalyst

Zeinab Yousef

1 Nature of reactants

A Kind of bonding in reactants

A) Ionic compounds

Very fast reactions

AS it takes place between **ions**

► **EX** The reaction between sodium chloride and silver nitrate.

B) Covalent compounds

Slow reactions

AS it takes place between **molecules**

► **EX** Reactions of organic compounds



Give reason for

1 The reaction between sodium chloride solution and silver nitrate solution is fast reactions.

Bec.

B Surface area exposed to reaction

► **As** Surface area increase Reactants exposed to **REACTION** increase

Example — **Reaction of Iron filling** (**Faster than**) **Block of Iron**



► **Hydrogen gas** evolves in Iron **filling**

(**Faster than**)

► **Hydrogen gas** evolves in **Block** of Iron



Give reason for

1 The speed of chemical reaction increases by increasing the surface area of the reactants exposed to reaction.

Bec.

2 Using nickel filings in hydrating oil instead of pieces of nickel

Bec.

2 Conc. of reactants

As **Conc.** of reactants **Increase**

Speed of chemical reaction **Increase**

No. of **Collisions** between molecules **Increase**

Example — The combustion of Magnesium

► In Pure oxygen **(Faster than)** ► In Atmospheric air



3 Reaction temperature

As **Temp** **Increase**

Speed of chemical reaction **Increase**

Movement of molecule **Increase**

No. of **Collisions** **Increase**

Zeinab Yousef

Give reason for

1 The speed of chemical reaction increases by raising the temperature.

Due

2 The fridge is used to preserve food.

Bec.

4 The Catalyst

The Catalyst

It is a chemical substance which **speeds up** the chemical reaction without changing or being used up

Example — Manganese dioxide (MnO_2)

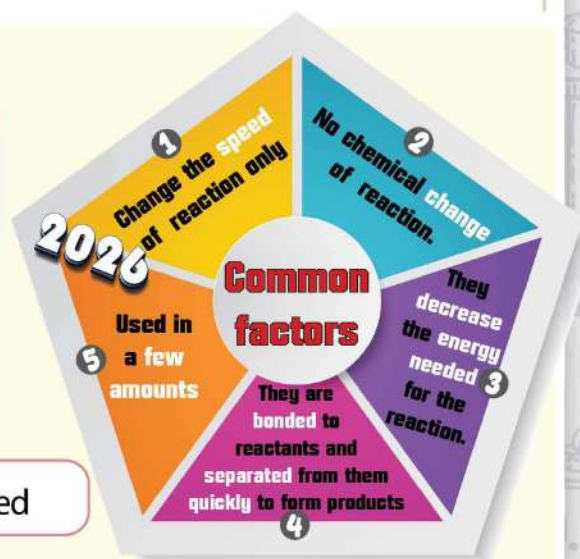
They are

A) **+Ve Catalyst**

► **Increase** the Speed

B) **-Ve Catalyst**

► **Decrease** the Speed



Enzymes

They are **chemical substance** produced by the body of living organisms act as **catalysts**

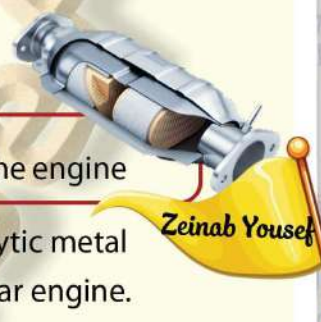
Example

The **Oxidase enzymes** in **sweet potato** acts as a catalyst which increase the rate of **decomposition** of H_2O_2 and more Oxygen bubbles evolve

Catalytic converter

Catalytic converter

It is a **metallic can** exists in cars to **treat** the **harmful gases** emitted from the engine



- ▶ **Structure** It is composed of ceramic cells covered with thin layer of a catalytic metal
- ▶ **Importance** It helps in the treatment of harmful gases emitted from the car engine.
- ▶ **Idea of operation**

- 1) Ceramic cells increase the surface area exposed to the reaction to economize the use of expensive metals.
- 2) The catalysts increase the speed of reactions with harmful gases emitted from the engine.



Science & technology and society

1 Usage of Sodium Bicarbonate

A) In The Home

- 1 Vacuum cleaner bag $\Rightarrow$ Removes dust smell.
- 2 Waste basket $\Rightarrow$ Prevents bad odors.
- 3 Kitchen sink $\Rightarrow$ Helps water drain faster.
- 4 Legumes soaking $\Rightarrow$ Reduces bloating.

B) In polishing metals

- 1 Silver tools $\Rightarrow$ Restores shine (luster).
- 2 Copper & chrome $\Rightarrow$ Cleans and polishes surfaces.

C) In the garden

- 1 Ants $\Rightarrow$ Helps get rid of them.

Zeinab Yousef

Unit 2 Electric energy & Radioactivity

Electric current

Flow of electric negative charges (electrons) through a conducting material (as a metal wire).

PHYSICAL PROPERTIES OF ELECTRIC CURRENT

1

Electric current intensity [I]

- Quantity of electric charges flowing through a cross section of the conductor in **one second**.

$$\text{Current intensity} = \frac{\text{quantity of charge}}{\text{time}}$$



- Units : $I \rightarrow$ **Ampere**
 $q \rightarrow$ **Coulomb**
 $t \rightarrow$ **seconds**

Ampere

Current intensity when **1C** of charge passes through the cross section of the conductor in **1 sec**.

Coulomb

Charge transferred by a **constant current** of one ampere in **one second**.

- Device : **Ammeter -A-**



The electric intensity is **directly** proportional to the **quantity** of charge and **inversely** proportional to the **time**

- UPS

Used in store the electric energy connected by electric device when is no current at home

2

Electric potential [V]

- State of electric conductor which determines the **transfer of electricity** to or from the conductor when connected to **another conductor**

Electric potential difference

Work done to transfer a quantity of electric charge between the two ends of this conductor.

$$\text{Potential difference} = \frac{\text{Work}}{\text{quantity of charge}}$$



- Units : $W \rightarrow$ **Joule**
 $V \rightarrow$ **Volt**
 $q \rightarrow$ **Coulomb**

Volt

Potential difference between two poles of a conductor where **1 joule** is done to transfer **1 coulomb** of charge.

- Device : **voltmeter** which connected in **parallel**

Electromotive force [e.m.f]

Electric potential difference between the two poles of the battery when the electric circuit is open (Unit : Volt).

- Step-up & down transformers
 Used to transfer high voltage into small voltage
 Which used in some electronic devices such as mobile cell phones

3

Zeinab Yousef

Electric resistance [R]

- Obstruction to the flow of the current in the electric circuit.
- 2 types :
 - Constant - Variable

Variable resistance

Its the **resistance** that can change its value in order to adjust the value of the current intensity and the potential difference in the different parts of the circuit

- IMP: **Control** the electric current intensity & potential difference

Ohm's law

Current intensity is **directly** proportional to the potential difference across the ends of the conductor at **constant** temperature.

$$\text{R (resistance)} = \frac{\text{V (Voltage)}}{\text{I (electric current)}}$$



- Unit: $R \rightarrow$ **Ohm**

The ohm

It is the **resistance** of a conductor which allows passing the electric current intensity of one ampere when the potential difference between its terminal is **one volt**.

NOTE

Electric potential difference is

- Directly proportional to work
- Inversely proportional to quantity of charge

- The positive pole of the voltmeter (red pole) is connected to the positive pole of the dry cell, and its negative pole (black pole) is connected to the negative pole of the dry cell

الخلاصة

The resistance

The ratio between the potential diff. and the current intensity passing through it

The Ohm

The resistance of a conductor when passing I of one ampere with V between two terminals is one volt

Ampere

The current inten. of a conductor of R is one ohm and V between two terminals is one volt

Volt

Potential difference of conductor when R one ohm & I passing through it is one ampere

Zeinab Yousef



خذ بالك عشان تحل
أصعب مسألة



Exercise

- 1 Calculate the current intensity passing through a cross-section due to the flow of 5400 coulombs for 5 minutes.

(Solution)

- 2 If an electric current of intensity 6 amperes passes through a conductor in 15 sec. find the quantity of electric charge

(Solution)

- 3 **Calculate** the quantity of charge passes through a conductor , its resistance equals 1000 ohm for 30 min. , if the potential difference between its poles equals 220 volt .

(Solution)

Zeinab Yousef

- 4 **Calculate** the amount of work needed to pass an electric charge 500 coulomb across a conductor with a resistance 3 ohm and the electric current intensity passes through is 2 amp.

(Solution)

- 5 **A quantity of charge 360 coulomb passes in conductor through time of one hour**, find the electric potential difference for the electric source if the resistance of the conductor 2200 ohm

(Solution)

(V = 220 volt)

- 6 **Calculate the work done** to transfer an electric charge of 20 coulomb through a conductor, if the potential difference between its terminals (ends) is 50 volt.

(Solution)

W = 1000 j

- 7 **Calculate the quantity of electricity** that flows in a wire when an electric current of intensity 18 ampere passes for 7 minutes through this wire

(Solution)

Q = 7560 C

TYPES OF ELECTRIC CURRENT

1

Direct electric current DC

Constant intensity

It flows in **one** direction

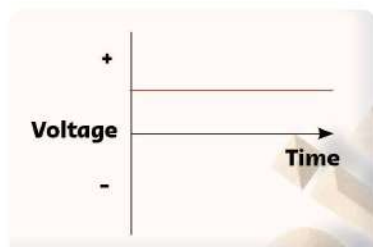
Electrochemical cells such as:

- The battery.
- The dry cell.

It's transferred over **short** distances.

Can't be converted into alternating current.

Operating some electric machines such as torches
Electroplating.



2

Alternating electric current AC

Variable intensities

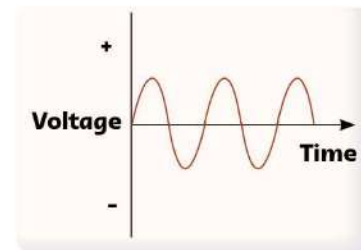
It flows in **opposite** directions

Electric generator (**Dynamo**).

Can be transferred over **short & long** distances.

Can be converted into direct current.

Lighting houses & streets & operating electric appliances at houses.



Intensity

Direction

Source

Transfer

Convert

Uses

Zeinab Yousef

Zeinab Yousef



Give reason for

1 The alternating current is preferred to the direct current ?

Bec.

.....

.....

.....

METHODS OF CONNECTING THE CELLS

1

Series Connection



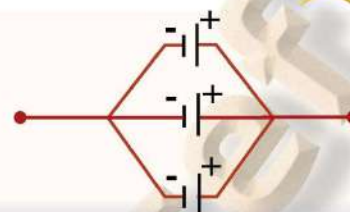
The **negative pole** is connected to the positive pole of the 2nd cell & so on.

The sum of e.m.f of all the cells.

$$E_{\text{battery}} = n \times E_1$$

2

Parallel Connection



Zeinab Yousef

The **positive poles** are connected together, while the negative poles are connected together.

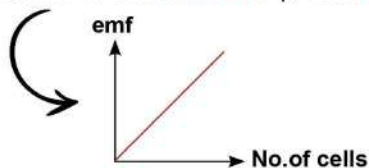
If the cells have the same e.m.f = emf of one cell.

$$E_{\text{battery}} = E_1 \text{ or } E_2 \text{ or } E_3$$

NOTE

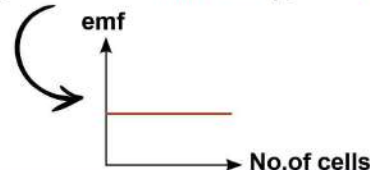
► In series

AS No. of cell increase $\uparrow$, emf increase $\uparrow$



► In parallel

AS No. of cell increase $\uparrow$, emf constant



Exercise

1

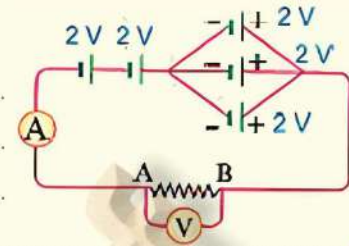
If you have 3 dry cells, the e.m.f of each cell is 3 volt. Show by drawing how to join them to get a new battery of:

- Highest e.m.f
- e.m.f = 6volt.
- Lowest e.m.f

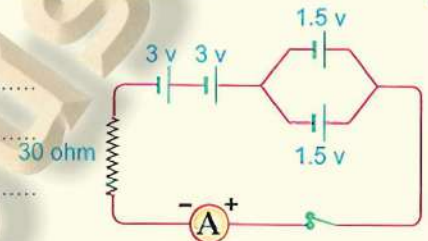
(Solution)

2 From the opposite figure:

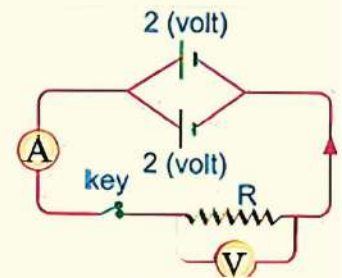
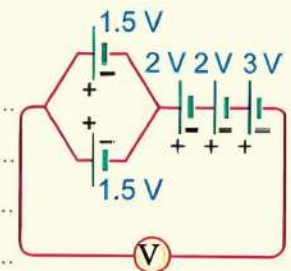
Calculate the work done to transfer a quantity of electric charge between the two points (A) and (B) for 5 minutes.

(Solution)

Zeinab Yousef

3 Calculate the electric current intensity passing through the opposite electric circuit.**(Solution)****4 In the opposite figures** If the quantity of electricity which passes through the electric circuit in a time 40 seconds is 20 coulomb. Find :

- The ammeter reading.
- The voltmeter reading.
- The value of resistance.

(Solution)**5 From the opposite electric circuit** : What is the reading of the voltmeter?**(Solution)**

Radioactivity

- ▶ **Nuclear energy** stored in the **atom's nucleus**
- ▶ **The stable elements** in which binding energy overcoming the repulsion force between protons and each other

Nuclear binding energy

Energy required to **binds** the nucleus component together & overcomes the repulsion force between **positively charged protons**.



Give reason for

1 The nuclei of radio active elements are unstable.

Bec. The number of neutrons is more than the number required for its stability.

Radioactive elements

Elements whose nuclei contain a number of **neutrons** more than the number **required for it stability**

AS

Radium

Uranium

Cesium

Polonium

Rubidium

Selenium

Zirconium

Radioactivity phenomenon

Discovered BY
Henri Becquerel



Zeinab Yousef

1 Natural

- ▶ Spontaneous decaying of nuclei of radioactive elements to be more stable

2 Artificial

- ▶ Radiation that released during **nuclear reaction** or **nuclear bombs**

1

Controlled
Happen in **nuclear reactor** in safe uses

2

Can't be controlled
Happen in **nuclear bombs** in military uses

The peaceful uses of nuclear energy

A) Medical field

To **treat & diagnose** diseases like cancer.

B) Agricultural field

To **eliminate** pests & **improve** races.

C) Industrial field

- ▶ To convert sand to silicon sheets **used in manufacture** of computer processors of electric appliance
- ▶ To **discover** defects in the manufacture products.

D) Electric generation field

- ▶ We use **nuclear energy** to heat water to produce steam that used to **generate electricity**

E) Space exploration field

- ▶ Which use **radioactive materials** as a nuclear fuel

F) Drilling field

- ▶ For **Petroleum** and **underground water**.

Dr / Aly Mostafa Moshrafa

Egyptian scientist

- ▶ He was made **theories** on atom & radiation considered as the **basics** of manufacturing the **atomic bomb**.

Radiation Pollution

Radiation Pollution

It is the **increase** of the amount of radiation in the environment.

Isotopes

Atoms of the same elements have the same number of protons and different number of neutrons **as** Hydrogen isotopes ^1H , ^2H , ^3H

A) Natural

- ▶ Natural radioactive materials.
- ▶ Cosmic radiation that comes from the outer space.

Sources of radiation pollution

B) Artificial

- ▶ The explosion of nuclear bombs.
- ▶ The nuclear reactors.

Zeinab Yousef

Example — Radiation Pollution

- ▶ **The explosion occurred in the Russian reactor** at Chernobyl in 1986 as a result of an error in operation.
- ▶ The **radioactive isotopes** were found in polluted food after Chernobyl accident are **iodine** and **cesium**.

The effect of radiation on the human body 2026

A) The effects due to exposed to large amount for short time

Spleen

Digestive system

Central nervous system

Bone marrow

▶ **Responsible for formation of red blood cell (1st)**

▶ **This lead to**

⇒ Feeling of big sick

⇒ Throat accompanied by nausea

⇒ Vertigo and diarrhea

B The effects due to exposed to small amount for long time**1) Physical effect**

Changes that appear on living being.

2) Genetic effect

Changes in the sex-chromosomes composition

3) Cellular effect

Changes in the cells composition this effect lead to destroying of the cells. **As** the change in the chemical str. of hemoglobin. **So**, it becomes not carrying oxygen.

Zeinab Yousef

Measuring the radiation

► The measuring unit is Sievert (SV)

► 1 milli Sievert = 10^{-3} Sievert

The peaceful uses of nuclear energy

- 1 20 millis Sievert per year
- 2 Should we radiation protective gloves, coleus & masks
- 3 Establish laws for nuclear stations to cool the hot water before throwing it in sea
- 4 Follow the following precautions with radioactive wastes
 - A) Nuclear wastes of weak & medium radiation surrounded by a cement layer or rocks.
 - B) Nuclear wastes of strong radiation deeply buried in the ground away from earth

Unit 3 Principles of Heredity

Kinds of Traits

Hereditary

- ▶ They are the trait that transmitted from generation to another
- ▶ EX : Hair color, skin color

Acquired

- ▶ They are the trait that aren't Transmitted from generation to another.
- ▶ EX : Playing football

Genetics

Zeinab Yousef

Science that researches the transmission of hereditary traits by studying the similarities & difference between the parents & off spring

Mendel performed his experiments using pea plant

04

Artificially pollinated.



01

Easy to be planted & grow fast.



05

Produce large no. plants.



02

Short life cycle.



06

Has contrasting traits.



03

Hermaphrodite (bisexual).



Zeinab Yousef



Give reason for

1 Mendel made self pollination for these plants

To be sure of the purity of this trait.

2 He removed the stamen from these flowers before the anther becomes mature

To insure the plant doesn't self pollinate.

3 He covered the stigmas to prevent

To cross pollination from other flowers.

Recessive traits

It is the trait that disappears completely in the **individuals** of first generation

Dominant traits

It is the trait that appears in all **individuals** of the first generation

Principle of complete dominance

The appearance of a hereditary trait in **the individuals** of the first generation when **two individuals** crossed and one of them is carrying a **pure hereditary** trait contrasting **the trait carried by the other individual**

Mendel assumptions

Each traits depends on heredity factor (genes)

Each heredity traits is controlled by two factors. (one from father & other from Mother)

The hereditary traits transmitted from parents to offspring through

Zeinab Yousef

NOTE

► These factors similar $\Rightarrow$ homozygous.

► If these factors different $\Rightarrow$ heterozygous.

Hybrid individual

Individual who carries different pairs of genes.

Pure individual

Individuals who carries a similar pairs of genes.

The seven pairs of traits of pea plant

Dominant Traits

Flower Color	Plant Height	Seed Color	Seed Shape	Pod Color	Pod Shape	Flower Position
						
Red	Tall	Yellow	Smooth	Green	Swollen	Side

Recessive Traits

Flower Color	Plant Height	Seed Color	Seed Shape	Pod Color	Pod Shape	Flower Position
						
White	Short	Green	Wrinkled	Yellow	Sinuous	End

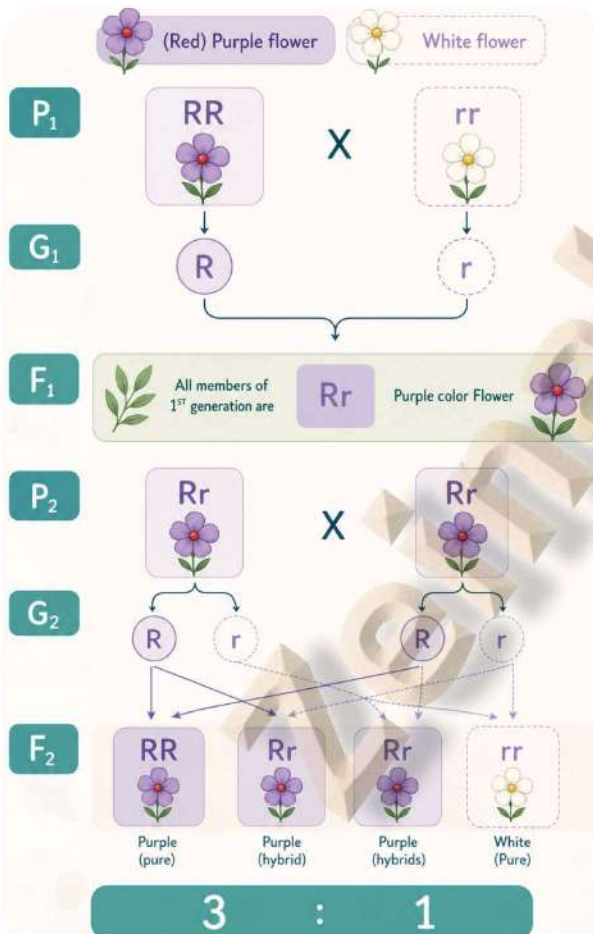
Mendel's Law

Law of segregation (Mendel's 1st law)

- ▶ When crossing **two** homozygous (pure) **individual** in **one pair** of **allomorphic** character one of them are dominant character & other are recessive character.
- ▶ **1st generation** $\Rightarrow$ **dominant character** appears at **100%**
- ▶ **2nd generation** $\Rightarrow$ **3 dominant: 1 recessive** appears by ratio.

Using of symbols to represent the experiment

- ▶ Dominant traits is represented by capital letter while recessive trait is represented by small letter.



Law of independent assortment of genes (Mendel's 2nd law)

- ▶ When crossing two individuals in **two pairs** or more of different allomorphic character
- ▶ **1st generation** $\Rightarrow$ **2 dominant characters** appear by **100%**
- ▶ **2nd generation** $\Rightarrow$ **2 dominant & 2 recessive** appears

in ratio 9 : 3 : 3 : 1

Yellow smooth seeds Green, wrinkled seeds

P₁ **YYSS** $\times$ **yyss**

G₁ **Y S** **y s**

F₁ **Yy Ss** **100%**

P₂ **Yy Ss** $\times$ **Yy Ss**

	YS	Ys	yS	ys
YS				
Ys				
yS				
Ys				

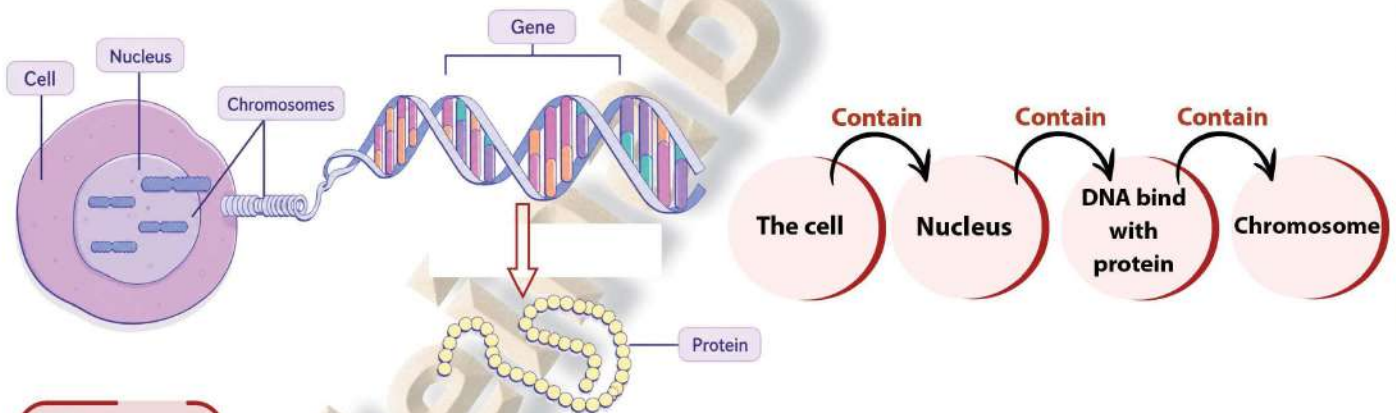
Zeinab Yousef

Some traits that follow the Mendelian heredity in human

Trait	Dominant	Recessive
1. Hair	 Curly hair	 Straight hair
2. Eye	 Wide eyes	 Narrow eyes
3. Cheek dimples	 Presence of dimples	 Absence of dimples
4. Facial freckles	 A face without freckles	 A face with freckles
5. Tongue	 The ability to roll the tongue	 Can't roll the tongue
6. Ear lobe	 Separate ear lobes	 Connected ear lobes
7. Eye color	 Brown eyes	 Colored eyes
8. Hair color	 Brown hair	 Blonde hair

Genes

Zeinab Yousef



Genes

Part of DNA on the chromosomes & control the individuals heredity traits

Watson & creek model for DNA molecule

► DNA molecule is consist of **two coiled** strands like spiral ladder (double helix)

► Where

⇒ The gene is the building block of nucleic acid (DNA)

⇒ The gene consists of nucleotides.

How do you inherit your genes

- ▶ **Individual inherits** half of his genes
- ▶ From **mother & other half from father as the following**
 - A)** By meiosis division reproductive cells produce male gametes & female gamete
 - B)** After fertilization, a zygote (2N) formed
 - C)** In the fetus's body the genes responsible for appearance of hereditary traits

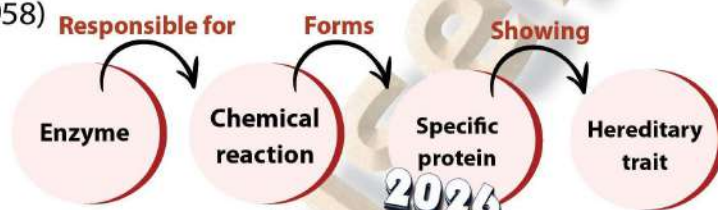
How do the genes perform

- ▶ Their functions (who won Nobel prize in 1958)

▶ **Scientists Badel & Tatum discovered**

⇒ **Every gene gives a special enzyme.**

▶ **So the function of gene**



1

▶ **Control** the body growth, features

2

▶ **Responsible** for appearance of hereditary traits



Science & technology and society Zeinab Yousef

1 Genetic engineering (bio - technology)

- ▶ Around 500.000 people affected by **losing their sight**
- ▶ **Due to** the deficiency in **vitamin (A) & malnutrition** increase in those who depends on eating rice. bec . **Doesn't contain pro-vitamin (A) (carotene)**
- ▶ **Solve**
 - A)** Inserting carotene gene
 - B)** Rice containing carotene
 - C)** Converted into vitamin (A) inside human body

Human genome

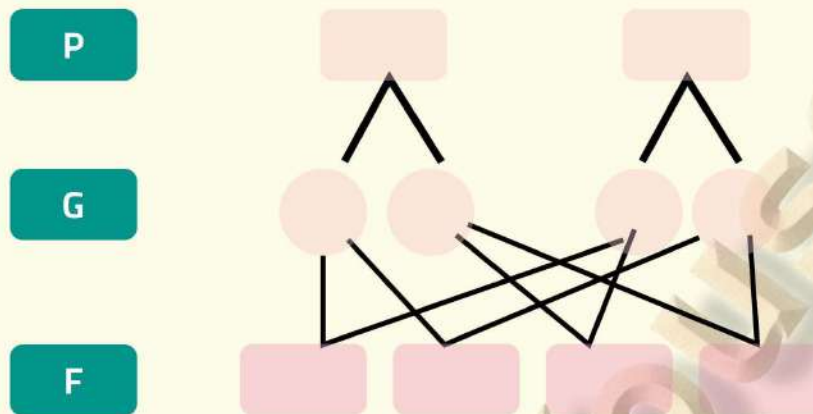
It is a **genetic map** included all the human chromosomes

- ▶ **Scientists discovered** the DNA is similar in a humans by ratio 99%

Exercise

- 1 Explain on genetic bases: The properties of the produced generation from self-pollination in a pea plant that has impure yellow seeds, knowing that the dominant gene is symbolized by (Y) & the recessive one is symbolized by (y).
- Mention the ratio of the produced individuals.

(Solution)



Zeinab Yousef

- 2 Explain on genetic bases: When pollinating flowers of a pea plant with each other, all the produced plants are of impure red flowers

(Solution)

- 3 Using symbols to express the results of mating between pure short stemmed pea plant (tt) and pure long stemmed pea plant (TT) showing first and second generations

(Solution)

- 4 If crossing takes place between two pea plants, one with pure red flowers and the other with white flowers, explain on genetic bases the result of the crossing between one of the first generation with a plant of white flowers.

N.B.: The red flower is symbolized by (R). The white flower is symbolized by (r).

(Solution)

- 5 The opposite figure represents the inheritance of one of humans traits. What is the number of the child that carries the recessive trait ?

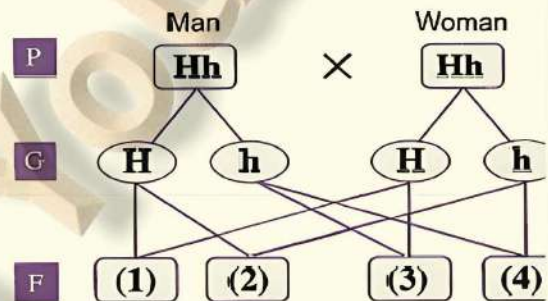
a. (1)

b.(2)

c. (3)

d.(4)

(Solution)



Unit 4 Hormones

Hormone

Chemical substance that controls & organizes most of the activities & functions in the body of living organisms.

Endocrine glands

They are **ductless** glands that secrete their hormones directly in blood **without passing** through ducts.

Target cells

They are the cells that the hormones affect and they are almost located away from the endocrine gland that secretes the hormone.

Hormone disorder

Is the increase or decrease in secretion of one of the hormones when the endocrine glands that secretes it doesn't act properly



Give reason for

Zeinab Yousef

1 The endocrine glands (Ductless glands) are called by this name

Bec. they secrete their hormones directly in blood without passing through ducts

2 The pituitary gland is called the master gland or main gland

As it regulate activities of most of other gland

Endocrine gland

Control

1 Pituitary gland

2 Thyroid gland

3 Two adrenal gland

4 Pancreas gland

5 Reproductive gland

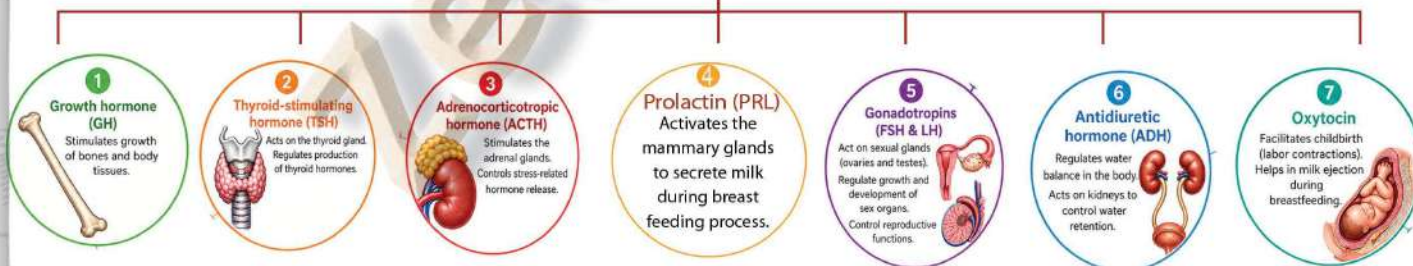
► Below the brain

Pituitary gland

► Two lobes (size of pea seed).



Secretes **hormones** that regulate the activity of other **endocrine glands**.



1 Growth Hormone

Fun.
Control growth rate of body

→ Diseases

Dwarfism Decrease its secretion [Dwarfism]

Gigantism Increase its secretion [Giant]

Thyroid gland

► Secrete two Hormones

Two lobes in the **front** surface of the neck [on both sides of trachea]

2 Thyroxin Hormone

Fun.
Play a main role in food assimilation process [liberation of energy]

→ Diseases

Simple goiter Decrease ↓ in thyroxin secretion **Sym.** Enlargement of thyroid gland and the neck

Exophthalmic goiter Increase ↑ in thyroxin secretion **Sym.** Enlargement of thyroid gland accompanied by loss of weight, tension and exophthalmoses

3 Calcitonin Hormone

Fun.
Controls the level of calcium in the blood.

→ Diseases

Adrenal gland

► Secrete adrenalin hormone

They are attached by the top of kidney.

4 Adrenalin Hormone

Fun.
Stimulates body's organs to respond to emergencies

Pancreas gland

► Secrete two Hormones

Zeinab Yousef

Located between stomach & small intestine

5 Insulin Hormone

Fun.
Reduce glucose sugar from blood to body cells
Store glucose sugar in liver in the form of **glycogen**

6 Glucagon Hormone

Fun.
Rises the level of sugar in blood by stimulating **liver** to convert the **glycogen**



Give reason for

1 The food must be contain iodine

Bec.

2 Pancreas is a double function gland

Bec.

3 Pancreas is Mixed gland (duct & ductless)

Bec.

Features of disorder in the secretion of insulin hormone

Diabetes

1 Symptoms

• Feeling very **thirsty** and multiple **urination** times.

2 Reason

• **Decrease** in the secretion of the insulin hormone. which leads to the cells are **unable** to use glucose.

Two testes glands

7 Testosterone Hormone

Fun.

It is responsible for the appearance of the male secondary sex characters.

Two ovaries glands

8 Esrtogen Hormone

Fun.

It is responsible for the appearance of the female secondary sex characters.

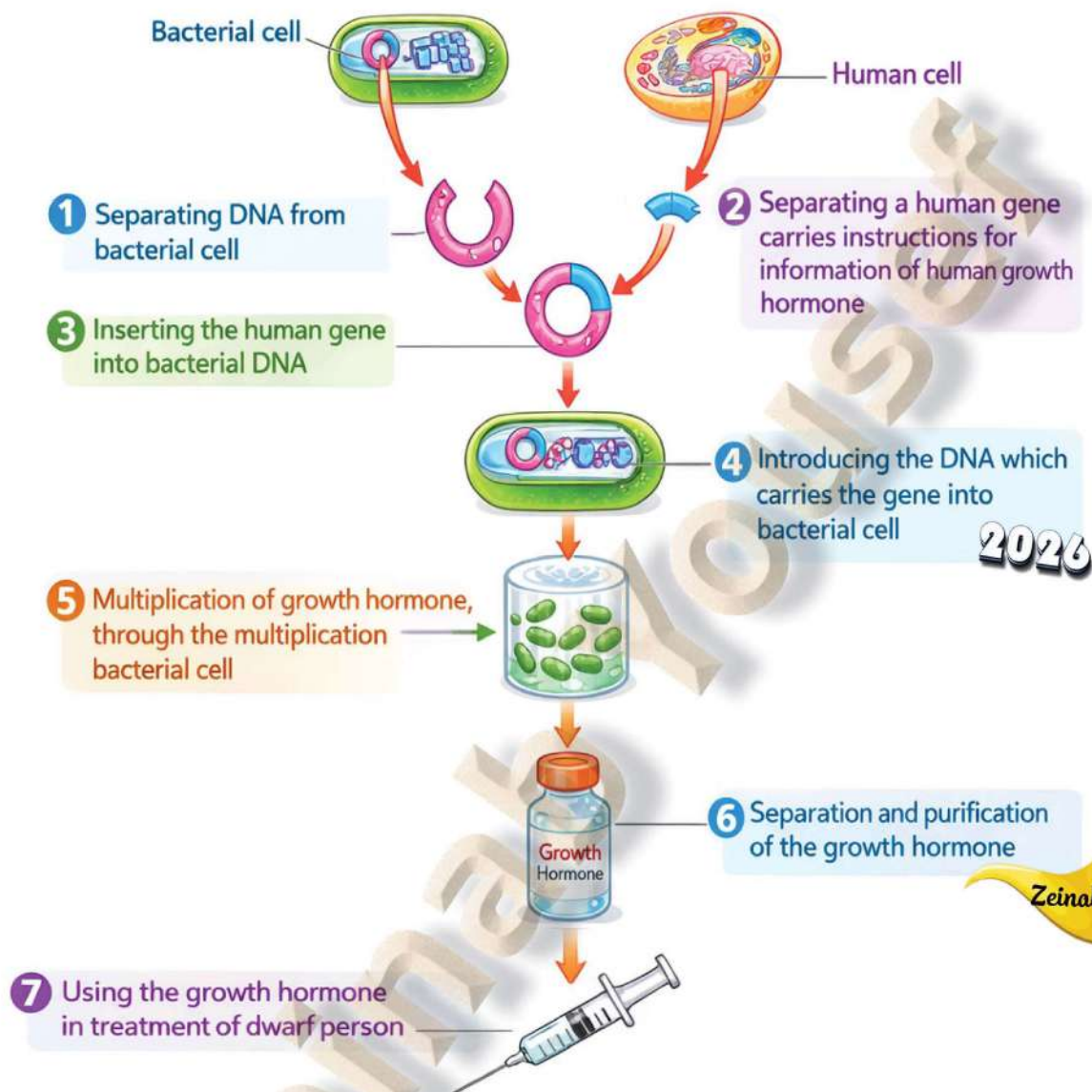
9 Progesterone Hormone

Fun.

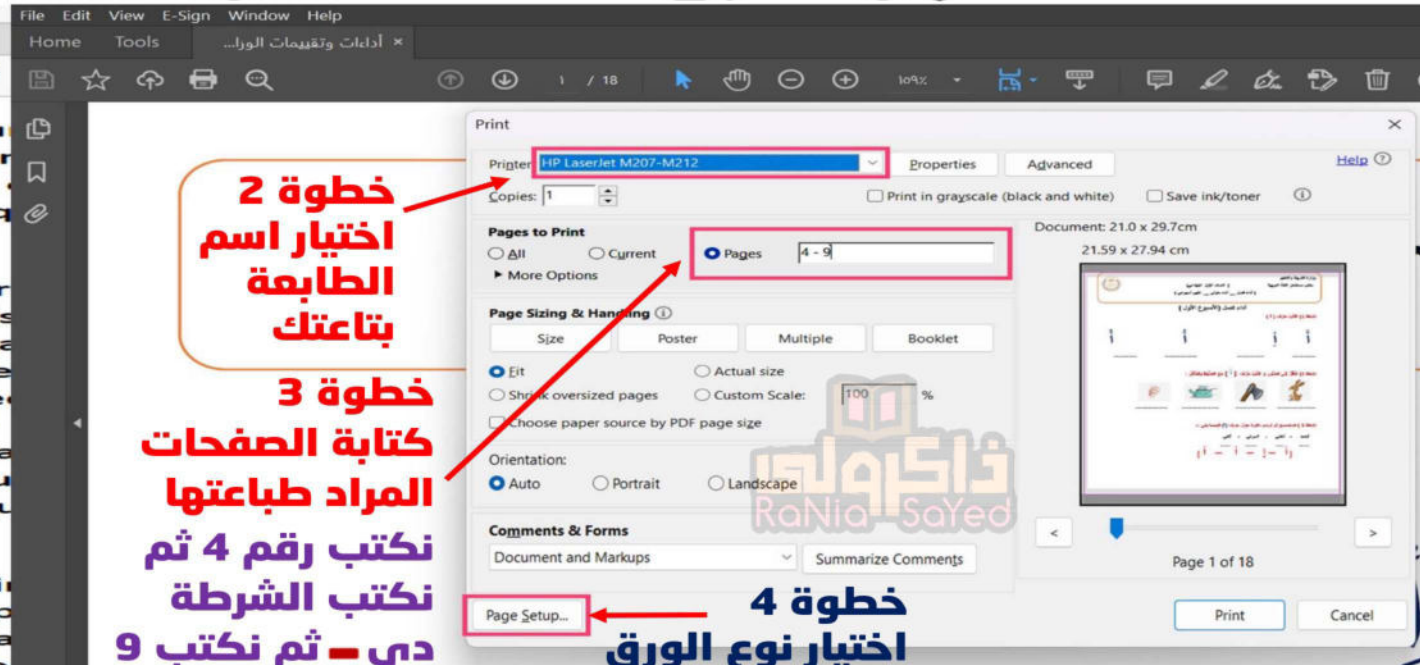
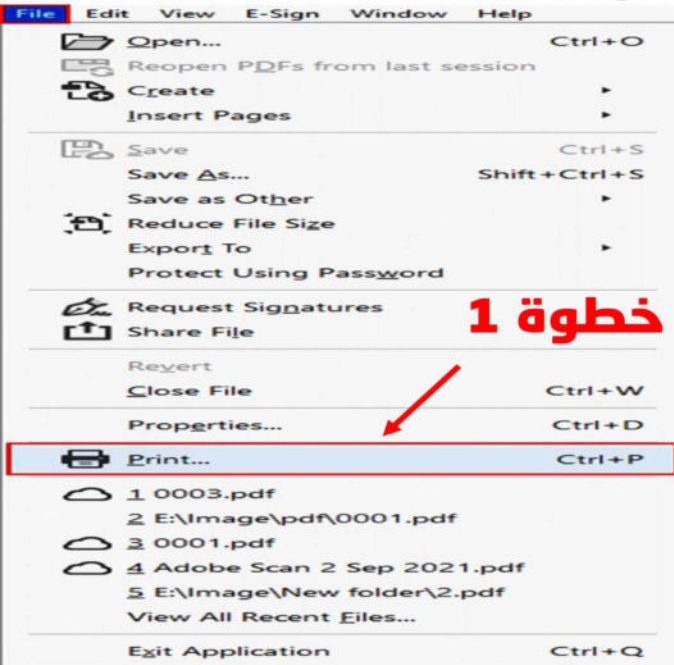
It promotes the growth of endometrium (The lining of uterus).

Zeinab Yousef

The following figure shows the steps of synthesis of growth hormone by genetic engineering



كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجاناً وحصرياً

المراجعة رقم (2)

الترم الثاني



Question 1:Choose the correct answer:

1. When heating copper hydroxide, we get
 a) copper carbonate and water vapor c) copper and hydrogen
 b) copper oxide and water vapor d) copper oxide and hydrogen

2. Some metal nitrates decompose with heat into
 a) metal nitrite and oxygen c) nitric oxide and hydrogen
 b) metal nitrate and oxygen d) metal nitrate

3. When heating red mercury oxide, it decomposes into
 a) oxygen c) oxygen and mercury
 b) mercury d) there is no correct answer

4. Almost metal carbonates decomposed by heating into metals and
 a) O₂ b) NO₂ c) CO₂ d) SO₃

5. One of the benefits of chemical reactions in our lives is
 a) manufacturing of medicine c) Fertilizer industry
 b) artificial fibers industry d) All of the above

6. Carbon dioxide gas is evolved when the is decomposed by heating.
 a) Cu(OH)₂ b) CuCO₃ c) CuSO₄ d) HgO

7. Thermal decomposition of blue copper sulfate gives copper oxide and gas.
 a) Sulfur dioxide c) Oxygen
 b) Sulfur trioxide d) Sulfur

8. The following chemical equation :- $2\text{NaNO}_3 \rightarrow 2\text{NaNO}_2 + \text{O}_2$ represents a reaction of
 a) Simple substitution c) Thermal decomposition
 b) Double substitution d) Neutralization

9. The airbag contains the sodium compound.
 a) Sulfate b) Azide c) Oxide d) Carbonate

10. Active metals replace the hydrogen of water, producing and hydrogen gas evolved.
 a) metal hydroxide b) metal oxide c) metal carbonate d) metal sulphate

11. The percentage of hydrogen increases during reactions.
 a) neutralization b) oxidation c) reduction d) thermal decomposition

12. When copper are added to dilute hydrochloric acid,
 a) Copper hydroxide is formed c) copper chloride is formed
 b) copper carbonate is formed d) no reaction occurs

13. When a sodium chloride solution reacts with a silver nitrate solution, a precipitate of silver chloride is formed.
 a) red b) white c) reddish-brown d) blue

14. When copper sulphate is heated, a color.....is formed.

- a) black b) green c) blue d) red

15. The oxygen (O_2) evolves by heating.....compound.

- a) $NaNO_3$ b) $CuSO_4$ c) $CuCO_3$ d) $Cu(OH)_2$

16. All of the following compounds give black precipitate on heating except

- a) HgO b) $Cu(OH)_2$ c) $CuCO_3$ d) $CuSO_4$

17. Double substitution reactions between two salt solutions are accompanied by formation of

- a) a metal. b) a precipitate. c) an oxide. d) a non-metal.

18. When we put an acid in a test tube containing caustic soda,.....produced.

- a. Only ionic compound is. c. Both ionic and covalent compounds are.
b. Only covalent compound is. d. No reaction occurs.

19. All the following elements replace hydrogen of the diluted acid except.....

- a) Al b) Zn c) Au d) Sn

20. On adding copper turnings to diluted hydrochloric acid,..... is produced

- a. copper hydroxide c. copper chloride
b. copper carbonate d. no reaction

21. Sodium metal can replace all of the following metals from their salt solutions except

- a. copper. b. potassium. c magnesium. d. zinc

22. When hydrochloric acid reacts with sodium carbonate, the reaction produces gas which...

- a. Turbid limewater. c. increases ignition.
b. Burns with a pop sound. d. Makes its color red

23. During the reaction between hydrogen and black copper oxide, a process.....occurs for copper oxide.

- a) oxidation c) oxidation and reduction
b) reduction d) no reaction

24. All of the following represents the reduction process except.....

- a. decreasing oxygen. b. gives up electrons.
c. gains electrons. d. combination with hydrogen

25. The change numberrepresents the reduction process.

- a. $Zn \rightarrow Zn^{++}$ b. $2Br^- \rightarrow Br_2$
c. $Cu^{++} \rightarrow Cu$ d. $2O^{--} \rightarrow O_2$

26. According to the chemical activity series, magnesium is more reactive than

- a) sodium b) zinc c) potassium d) calcium

27. The reaction of fireworks is one of the reactions

- a) Very fast b) Relatively fast c) Relatively slow d) Very slow

28. The chemical formula of nitrogen pentoxide gas
a) N_2O_2 b) N_2O_5 c) N_2O_4 d) N_5O_2
29. The unit of measurement for the concentration of reactants or substances resulting from a chemical reaction
a) mol/s b) mol x liters c) mol / liter d) liters / mol
30. The reaction of oil with caustic soda is one of the.....reactions.
a) Fast b) Relatively slow c) Very slow d) Very very slow
31. At the beginning of the chemical reaction, the concentration of the reactants is.....
a) 100% b) Zero c) 50% d) 25%
32. The time required to complete reactions of ionic compounds the time required to complete the reactions of covalent compounds under the same reaction conditions.
a) Greater than c) Equal to
b) Less than d) There is no correct answer
33. The reaction of silver nitrate with sodium chloride is one of the..... reactions
a) Fast b) Medium c) Slow d) Very slow
34. The speed of the reaction of sodium chloride solution with silver nitrate solution is measured by the rate of appearance of aprecipitate
a) Sodium nitrate c) Silver nitrate
b) Sodium chloride d) Silver chloride
35. From the factors affecting the speed of a chemical reaction
a) Concentration of reactants c) Temperature
b) Nature of reactants d) All of the above
36. Increasing the concentration of the reactants(temperature) during a chemical reaction makes the number of collisions between molecules
a) Decreases by a quarter b) Increases c) Is not affected d) Decreases by half
37. The substance that decrease the reaction rate and does not change is called.....
a) Oxidizer b) Reductant c) Positive catalyst d) Negative catalyst
38. All of the following are from the properties of the catalyst except
a) Its mass decreases
b) It binds to the reactants during the reaction and then separates from them.
c) It changes the reaction rate.
d) It does not undergo a chemical change.
39. The rate of decomposition of hydrogen peroxide increases by the addition of
a) Manganese oxide b) A piece of potato c) Manganese dioxide d) B, C together.

40. The number of collisions between molecules increases and so the rate of the chemical reaction increases

- a) Increase in temperature. c) Increase in concentration of reactants. d) A, C together
b) Increase in concentration of products.

41. When the temperature of the chemical reaction increases, the rate of the reaction increases due to the increase in

- a) The surface area exposed to the reaction.
b) The number of reacting molecules.
c) The number of possible collisions between molecules.
d) The number of reacting atoms.

42. Enzymes work..... in many biological processes.

- a) As oxidizing agents c) As reducing agents
b) As disinfecting agents d) As catalysts

43. All of the following affect the speed of a chemical reaction except

- a) Concentration of reactants c) Nature of products
b) Nature of reactants d) Reaction temperature

44. Iron filings react with diluted hydrochloric acid faster than a piece of iron that has the same mass due to the.....

- a) increase concentration. c) increase in surface area.
b) presence of a catalyst. d) increase in temperature.

45. On the reaction of 1gm of pieces of calcium carbonate with hydrochloric acid, its concentration is 1 mole/liter a known volume of CO_2 gas evolves in 60 sec., on repeating the same experiment by using 1gm of pieces of calcium carbonate with hydrochloric acid, its concentration is 2 mole/liter, the same volume of the CO_2 gas evolves in sec.

- a) 30 b) 60 c) 120 d) 180

46. ... is used in polishing metals.

- a. Sodium carbonate a. Sodium bicarbonate
a. Sodium hydroxide a. Sodium azide

47. The electric charge which transferred by electric current equal (1) ampere per second is called ..

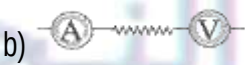
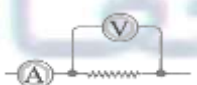
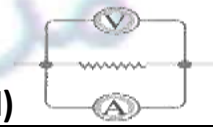
- a) Ohm b) Coulomb c) Volt d) Ampere

48. Volt =

- a) Coulomb / Joule c) Ohm / Ampere
b) Coulomb / Second d) Joule / Coulomb

49. The reading of the voltmeter between two poles of the battery in the open circuit indicates

- a) Current intensity c) Electrical resistance
b) Potential difference d) Electromotive force

50. The flow of electric charges through a metal wire in a closed electric circuit represents
 a) Electrical resistance b) Electric current c) Potential difference d) Electric current intensity
-
57. If the amount of work done is doubled, then the electric potential difference Will..... when the amount of electricity is constant.
 a) increases four time. c) decreases by half.
 b) increases twice d) decreases by a quarter.
-
58. If the Attraction force between nucleus and electrons is vanished, electrons will become
 a) localized b) free c) static d) all the pervious
-
59. In the electrical cell, energy is transformed into electrical energy.
 a) Magnetic b) Kinetic c) Sound d) Chemical
-
60. The nuclear reactions taking place in it cannot be controlled.
 a) Nuclear reactors b) turbines c) atomic bombs d) medical laboratories
-
61. The radiologist should not be exposed to radiation in amounts more than...milli sievert per year.
 a) 5 b) 10 c) 15 d) 20
-
62. The ratio between the potential difference between the two ends of a conductor and the current flowing through it expresses
 a) Electromotive force c) Electric current
 b) Electrical resistance d) Quantity of electricity
-
63. The product of the intensity of the current flowing in a conductor and the time of flow of this current produces a physical quantity measured in units of
 a) ampere b) coulomb c) ohm d) volt
-
64. If the electric current passing through an electrical resistance of 5 ohms doubles, the resistance value will be:
 a) 5 ohm b) 10 ohm c) 40 ohm d) 20 ohm
-
65. Which one of the following figures represents a part of an electrical circuit that contains an ammeter and voltmeter connected in the right way?
 a)  b)  c)  d) 
-
66. We can control the value of the current intensity that passes in the different parts of the circuit by using the.....
 a) ammeter b) voltmeter c) rheostat d) ohmmeter
-
67. We can control the value of the electric resistance by using.....
 a) ammeter b) voltmeter c) rheostat d) ohmmeter

68. The is used to measure the electrical resistance.

- a) ammeter b) voltmeter c) rheostat d) ohmmeter

69. According to Ohm's law at constant temperature, if the potential difference between terminals of a conductor is doubled so the resistance of this conductor is.....

- a) doubled. b) remain constant c) decreases to half. d) increases 4 time

70. The value of the resistance of an electrical conductor in an electrical circuit is changed on changing.....

- a) Dimensions of the conductor.
b) Electric current intensity passing through it.
c) Quantity of electric charges passing through it.
d) Time of connection

71. The diagram verifies Ohm's law.



72. Direct current can be produced from

- a) electrochemical cells c) electric power stations
b) electric generators d) electric motors

73. Alternating current is used in

- a) electrolysis b) lighting house c) electroplating d) both a & c

74. One of the properties of the direct current is.....

- a) change value. d) change direction.
b) constant value and direction. c) change value and direction



75. In dynamo, ... energy is converted into electric energy.

- a) Magnetic b) Kinetic c) light d) Chemical

76. From the examples of electrochemical cells is.....

- a) ohmmeter. b) rheostat c) dynamo. d) dry cell.

77. The radioactive phenomenon was discovered by the scientist.....

- a) Ohm. b) Volt c) Becquerel. d) Ampere.

78. is a non-radioactive element.

- a) Radium b) Iron c) Uranium d) Zirconium

79. The effects of radiation are a result of changing the sex chromosomes of the cells

- a) physical b) genetic c) cellular d) chemical

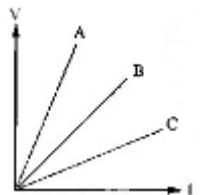
80. The first which is affected by exposure to large dosages of radiation for a short time is.....

- a) stomach. b) larynx. c) bone marrow. d) two lungs

81. The measuring unit of the absorbed radiation is the

- a) Curie. b) Sievert. c) Rontgen. d) Ohm

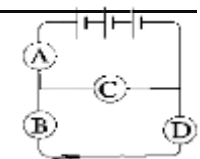
82. The opposite figure shows the relationship between potential difference and electric current intensity for three different wires. We show that the resistance of wire number is more than the other two wires.



- a) A b) B c) C d) no correct answer

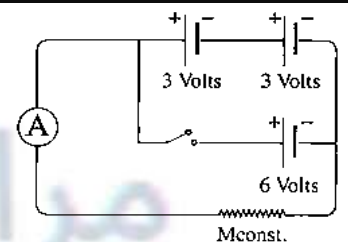
83. In the opposite figure of an electric circuit, when the bulb number..... is burnt, all lamps will put off.

- a) A b) B c) C d) D



84. When the switch is closed in the opposite circuit, the ammeter reading.....

- a) doesn't change. c) decreases to half.
b) increases to double. d) increases four times.



85. If two conductors are connected by a copper wire, conductor (A) of 6600 coulomb and conductor (B) of 3300 coulomb, then the electric charges.....

- a) pass from conductor (B) to conductor (A). not pass in any direction.
b) pass from conductor (A) to conductor (B). c) pass in both directions.

86. The mathematical relationship of Ohm's law is.....

- a) $R = V/I$ b) $I = RV$ c) $R = V \times I$ d) $V = R/I$

87. Rockets usefuel for flying.

- a) gasoline b) kerosene c) natural gas d) nuclear

88. Cosmic radiation is fromsources of radiation pollution.

- a) natural b) artificial c) industrial d) no correct answer

89. The nuclear energy is peacefully used in the industrial field to convert sand to.....for manufacturing computer processors.

- a. electric energy b. silicon sheets c. nuclear fuel d. atomic bombs

90. On connecting 5 electric cells have the same electromotive force on parallel, the e.m.f of each cell is 2.5 volts, so the total e.m.f equals.....volts.

- a) 2.5 b) 5 c) 7.5 d) 12.5

91. According to Mendel's second law, each pair of hereditary traits is inherited independently and appears in the second generation at a ratio of

- a) 1:1 b) 2:1 c) 3:1 d) 1:4

92. From the dominant traits in humans that follow Mendelian inheritance are

- a) Freckles on the face b) Wide eyes c) Soft hair d) Absence of dimples

93. The chemical composition of a chromosome is DNA and

- a) Carbohydrates b) Protein c) Fats d) Water

94. A gene controls the appearance of the genetic trait by producing.....

- a) Hormone b) Enzyme c) Chromosome d) A and C together

95. The genetic structure of a short-stemmed, white-flowered pea plant is

- a) ttTT b) TTrr c) ttrr d) TTRR

96. All of the following are dominant traits in humans except.....

- a) Curly hair c) wide eyes
b) The presence of a moustache d) Ability to rolling tongue

97. The two scientists who discovered how the gene works are.....

- a) Watson and Crick c) Hershey and Chase
b) Beadle and Tatum d) Mendel and Tatum

98. From the dominant traits in humans are.....

- a) Smooth hair b) brown eye c) freckles d) black eyes

99. The genotype of a pea plant with wrinkled, yellow seeds is.....

- a) yyRR b) YYRR c) yyrr d) YYss

100. When a tall-stemmed, red-flowered pea plant is crossed with a pure, short-stemmed, white-flowered pea plant, the first generation produces all plants that have.....

- | | |
|---------------------------------|----------------------------------|
| a) Tall-stemmed, red-flowered | c) Short-stemmed, red-flowered |
| b) Tall-stemmed, white-flowered | d) Short-stemmed, white-flowered |

101. Genetically modified rice contains...

- | | | | |
|--------------|---------------|-------------|------------|
| a) Vitamin A | b) Folic acid | c) Carotene | d) Melanin |
|--------------|---------------|-------------|------------|

102. Mendel has covered.....of the pistils in order cross-pollinate from other flowers.

- | | | | |
|------------|------------|-----------|-----------|
| a) Stamens | b) stigmas | c) sepals | d) petals |
|------------|------------|-----------|-----------|

103. Mendel removed the stamens of plant flowers before the anther becomes mature to prevent...

- | | |
|-----------------------|--|
| a) self-pollination. | c) artificially pollination. |
| b) Cross pollination. | d) cross and artificial pollination together |

104. According to Mendel's first law, the hereditary factors.....when gametes are formed.

- | | | | |
|------------|---------|--------------|--------------|
| a) combine | b) fuse | c) segregate | d) disappear |
|------------|---------|--------------|--------------|

105. The recessive trait appears on one of the sons, if he is inherited...from their parents.

- | | |
|------------------------|---|
| a) two dominant genes | b) only one dominant gene |
| c) two recessive genes | d) a recessive gene and a dominant gene |

106. The gene which prevents the appearance of the effect of the other gene is known as

- | | | | |
|----------------|------------------|--------------|---------------|
| a) homozygous. | b) heterozygous. | c) dominant. | d) recessive. |
|----------------|------------------|--------------|---------------|

107. The two factors of a hereditary trait are similar in theindividual.

- | | | | |
|---------|-----------|--------------|----------------|
| a) pure | b) hybrid | c) recessive | d) (a) and (c) |
|---------|-----------|--------------|----------------|

108. If two hybrid individuals cross with each other, 300 individuals are produced due to this crossing, so the number of the hybrid individuals among offspring may be individual.

- | | | | |
|-------|--------|--------|--------|
| a) 50 | b) 100 | c) 150 | d) 200 |
|-------|--------|--------|--------|

109. If the genetic structure of one of the producing individuals is (aa), the genetic structure of the parents may be.....

- | | | | |
|------------|------------|------------|------------|
| a) Aa x AA | b) AA x AA | c) aa x Aa | d) aa x AA |
|------------|------------|------------|------------|

110. According to Mendel's second law, the recessive trait appears in the second generation at a percentage of.....

- | | | | |
|--------|--------|--------|---------|
| a) 25% | b) 50% | c) 75% | d) 100% |
|--------|--------|--------|---------|

111. Mendel's second law is known as the law of factors.

- | | |
|---------------------------|------------------|
| a) independent assortment | c) merging |
| b) segregation | d) disappearance |

112. Which one of these traits is recessive in humans?

- | | | | |
|----------------|---------------|-------------------|------------------|
| a) Curly hair. | b) Wide eyes. | c) Free ear lobe. | d) Straight hair |
|----------------|---------------|-------------------|------------------|

113.is/are the part(s) of DNA present on the chromosomes and control the hereditary traits of the individuals.

- | | | | |
|----------|------------|--------------|------------|
| a) Genes | b) Gametes | c) Cytoplasm | d) Nucleus |
|----------|------------|--------------|------------|

- 114.** Mendel let the pea plant several times to ensure the purity of the traits.
a) Artificially b) Self-pollinated c) Cross-pollinated d) All of the above
- 115.** The trait is always pure.
a) Acquired b) Genetic c) Dominant d) Recessive
- 116.** In one of the plants, the white fruit color gene (W) is dominant over the yellow fruit gene (w). The plant with white fruit was crossed with the plant with yellow fruit. About half of the offspring had white fruit and the other half had yellow fruit. The genotype of the parents is:.....
a) WW x Ww b) WW x ww c) Ww x ww. d) ww x ww.
- 117.** The percentage of offspring that carry a recessive trait for two parents who are both hybrid is%
a) 0 b) 25 c) 50 d) 75
- 118.** According to Mendel's law, genetic traits during the fertilization.
a) multiply b) separate c) aggregate d) disappear
- 119.** Mendel conducted his experiments in pea plant by using pairs of traits.
a) 5 b) 7 c) 9 d) 11
- 120.** DNA molecule consists of strands.
a) 2 b) 3 c) 4 d) 5
- 121.** If a pollination takes place between 2 hybrid individuals, the product is 60 individuals, so the number of produced hybrid individuals may be individual.
a) 15 b) 50 c) 30 d) 10
- 122.** The hormone which regulates the level of calcium in blood is the hormone.
a) calcitonin b) thyroxin c) progesterone d) adrenalin
- 123.** The hormone liberates the needed energy from the food stuff.
a) growth b) estrogen c) thyroxin d) adrenalin
- 124.** The hormone, whose deficiency causes the enlargement of the thyroid gland is.....
a) estrogen. b) insulin. c) thyroxin. d) d. glucagon
- 125.** The hormone which stimulates the release of glucose sugar from the liver is the... hormone.
a) thyroxine b) insulin c) estrogen d) glucagon
- 126.** In an experiment, a researcher eradicates (removes) a pancreas from a rat. Which symptoms could appear on this rat?
a) Diabetes. c) Exophthalmic goiter.
b) Gigantism. d) Simple goiter
- 127.** element shares in composing thyroxin hormone.
a) Iodine b) Iron c) Sodium d) d. Calcium
- 128.** The hormone responsible for the appearance of male secondary sex characters is the hormone.
a) progesterone b) testosterone c) adrenalin d) growth

129. The hormone responsible for the appearance of the female secondary sex characters is the..... hormone.

- a) progesterone b) estrogen c) adrenalin d) testosterone

130. Sever damage of.....gland, may cause death.

- a) parathyroid b) thyroid c) ovary d) pituitary

131. The effect of the decrease of glucagon hormone secretion, is similar to.....

- a) The decrease in insulin hormone secretion.
b) The increase in insulin hormone secretion.
c) The decrease in calcitonin hormone secretion.
d) The increase in calcitonin hormone secretion

132. The hormone which stimulates the body's organs to respond to emergencies is.....

- a) insulin. b) glucagon. c) estrogen. d) adrenalin

133. The..... is the only way for hormones to reach the target cells

- a) saliva b) blood c) water d) ducts

134. The hormone that promotes the growth of endometrium is the hormone.

- a) Testosterone b) progesterone c) estrogen d) growth

135. Both the hormone insulin and the hormone glucagon agree in.....

- a) Increased blood glucose c) function
b) Installation d) contradicts the function

136. The adjective of freckles is expressed by the symbol

- a) Rr b) rr c) Ww d) RR

137. A pea plant that is tall with white flowers and has the genotype (Tt rr). Which of the following represents one of its gametes after the segregation of factors?

- a) Tt b) Rr c) Tr d) t



Question 2:

Put (✓) or (×):

1	Hydrochloric acid reacts with sodium carbonate and the gas released turbid the clear lime water.	()
2	When hydrochloric acid is added to copper , no reaction occurs	()
3	Chemical reaction is the breaking up of bonds in the products molecules from the reaction and formation of new bonds in the reactant's molecules.	()
4	Copper replaces magnesium in its salt solutions.	()
5	Potassium reacts with water momentarily.	()
6	Oxidation and reduction reactions occur separately from each other.	()
7	Oxidation is a chemical process in which an element loses one or more electrons.	()
8	The chlorine atom turns into a chloride ion when it loses an electron from its outer energy levels.	()
9	The transformation of Fe^{+2} into Fe^{+3} it is considered a reduction process	()
10	The reactions of ionic compounds are faster than covalent compounds	()
11	The chemical formula of Nitrogen pentoxide gas is N_5O_2 .	()
12	The reaction of oil with caustic soda is considered a very rapid reaction.	()
13	The time of reaction to form soap is more than the time of iron rusting reaction.	()
14	The hexagonal ceramic cells used in catalytic converter to decrease the exposed surface area of reaction.	()
15	The unit of measurement of the amount of electric charge is amperes × seconds .	()
16	The electric current passes through the electric conductor when the electric potential of its two terminals are equal.	()
17	The electromotive force for three dry cells connected in parallel equals third of electromotive for three dry cells connected in series.	()
18	In electric cells and batteries, chemical energy is converted into electrical energy.	()
19	Dynamo produces an alternating electric current.	()
20	Connecting electrical poles in series increases the intensity of the current generated in the electrical circuits when the resistance is constant.	()
21	The e.m.f of several cells which are connected in series is equal to the e.m.f of one cell.	()
22	The spleen is damaged, on exposing the human for a large dosage through short period of time.	()
23	Bone marrow is the first which is affected by nuclear radiation.	()
24	The chemical composition of hemoglobin changes due to radiation exposure, making it unable to carry nitrogen.	()

25]	The acquired traits are transmitted from one generation to another.	()
26]	The individual that inherits just one gene for facial freckles trait from one of their parents, the trait does not appear on him.	()
27]	Mendel removed petals from the pea plant's flowers to ensure that the plant does not self-pollinate.	()
28]	The ratio of TR gametes is 75% in a plant whose genetic structure is TtRr	()
29]	When a pure short stem pea plant is pollinated with a hybrid long stem one, all the plants produced are short stem.	()
30]	The free ear lobe is a dominant trait.	()
31]	The presence of cheek dimples is a recessive trait.	()
32]	Genes are parts of DNA found in the cytoplasm of the cell.	()
33]	The genes control the appearance of hereditary traits of the living organism by producing vitamins.	()
34]	The protein responsible for the appearance of brown eyes is no different from the protein responsible for the appearance of curly hair.	()
35]	Iodine is a component of the hormone thyroxin.	()
36]	Target cells are usually located near the gland that secretes the hormone targeting them.	()
37]	gigantism disease is a continuous growth in the bones of the skull as a result of lack of growth hormone in childhood	()
38]	Gigantism occurs due to the increase of secretion of calcitonin hormone	()
39]	Thyroid gland secretes a hormone that regulates the growth and development of sexual organs in the human body.	()
40]	Thyroxin is a chemical message that controls and regulates some vital activities and functions in the body	()
41]	The calcitonin hormone controls the level of calcium in the human body.	()
42]	The iron element is shared in composing thyroxin hormone.	()
43]	Enzymes work with the nervous system to regulate and coordinate the body's various activities and functions.	()

Question 3:Complete the following statement:

1]	The compound decomposes by heat into its simple components in reactions of
2]	Most sulphate metals decomposed by heating into and sulfur trioxide gas.
3]	 is considered one of the most important safety means in modern cars , as it is filled with gas
4]	 gas turbid the clear lime water , whilegas increases the glowing splint.

5)	When an acid reacts with an alkali , it produces and
6)	$2Al + \dots \rightarrow 2AlCl_3 + \dots$
7)	$Mg + CuSO_4 \rightarrow \dots + \dots$
8)	In the series of chemical activity , the metals are arranged in the..... according to
9)	Some metals react with water and produce , metal andgas is evolved.
10)	 is an element that does not replace the hydrogen of the acid.
11)	The reaction of acids with alkalis is a type of the reaction.
12)	Potassium reacts with diluted hydrochloric acid to form andgas is evolved.
13)	The reaction of zinc with hydrochloric acid is considered a reaction, while the reaction of sodium carbonate with the same acid is a reaction
14)	When magnesium replaces copper in its salt solutions , a color precipitation is formed
15)	A substance that loses one or more electrons during a chemical reaction is known as
16)	Oxidation and reduction are two processes
17)	When hydrogen gas is passed over hot copper oxide , the copper oxide turns into.....and the is formed
18)	The change in the concentration of reactants and products per unit time is called
19)	The speed of a chemical reaction is measured practically by the rate of appearance of one..... or the disappearance of one of
20)	The reaction of sodium chloride powder is from the reaction of a cube of sodium chloride which has the same mass
21)	The factors affecting the rate of a chemical reaction are , , and
22)	Iron rusting is considered a reaction , while the fireworks reaction is a reaction
23)	At the beginning of the chemical reaction , the concentration of the reactants is while the% and the concentration of the products is.....%,
24)	the nature of the reactants depends on.....and
25)	The rate of hydrogen peroxide decomposition can be increased by adding or by adding a piece of
26)	Catalytic agents such as.....or Iridium or..... are used in the catalytic converter and they work on
27)	Sweet potatoes produce enzyme which increases the speed of the decomposition of

28]	The catalyst changes the speed of the chemical reaction without affecting the orreaction.
29]	In most modern cars have.....to treat harmful gases resulting from fuel combustion before they are expelled
30]	When a positive catalyst is used, the amount of energy required for the Chemical reaction to occurand its mass
31]	Uses a deviece To control the electric potential difference in electrical circuit, And uses a device to convert the voltage from 220 volts to 110 volts.
32]	When mating a male and a female with their genetic makeup (Bb)), the ratio of hybrid individuals to the ratio of The resulting pure individuals are:
33]	In pea plants, the green color is dominant over, while the yellow color is dominant over
34]	If a male and a female both have the genotype, the ratio of offspring with genotypeto total offspring is
35]	begin to secrete their hormones around the age of puberty.

Question 4:Write the scientific term:

- 1) The breaking bonds between the molecules of the reactants and forming new bonds between the molecules of the molecules resulting from the reaction. (.....)
- 2) Chemical reactions in which the thermal compound decomposes into its primary elements or simple compound (.....)
- 3) Cells through which genetic factors are transmitted from parents to children (.....)
- 4) Arranging the metallic elements in descending order according to their chemical activity(.....)
- 5) A chemical reaction in which one element is replaced by another element that is more chemically active. (.....)

Question 5:Give reasons for the following:

1. A Silver color appears when red mercury oxide is heated
•
2. A black substance is formed when green copper carbonate is heated strongly
•
3. A black color appears when blue copper sulfate is heated
•
4. The color of sodium nitrate changes to yellowish white by heating
•
5. A black substance is formed when green copper carbonate is heated strongly
•
6. Chemical reactions are of great importance in our daily lives
•
7. The airbag is considered one of the
•
8. Do not extinguish sodium fires with water
•
9. Magnesium can replace copper in its salts solution , but the opposite does not happen
•
10. Effervescence occurs when sodium carbonate is added to dilute HCl
•
11. Gold does not react with acids
•
12. Bubbles rise when aluminum is added to hydrochloric acid , which burns with a pop sound
•
13. Do not store silver nitrate in aluminum containers
•
14. Oxidation and reduction are two concurrent processes
•

15. Most metals act as reducing agents , while most nonmetals act as oxidizing agents

•

16. Although the absence of oxygen in the reaction between sodium and chlorine it considered as an oxidation reaction

•

17. The reaction between aluminum and hydrochloric acid is faster than the reaction between zinc and hydrochloric acid

•

18. Chemical reactions between ionic compounds are faster than between covalent compounds

•

19. The reaction rate of HCl with iron filings is faster than its reaction with pieces of iron

•

20. The reaction rate increases with increasing concentration of reactants

•

21. The reaction rate increases with increasing temperature

•

22. A catalyst is used In some reactions

•

23. It is preferable to use fragmented nickel in the hydrogenation of oils

•

24. Food is preserved in the refrigerator for a long time

•

25. A sliding rheostat is used in some electric circuits.

•

26. Mendel's First Law is known as the Law of Segregation

•

Question 6:What happens in the following:

1. Heating red mercury oxide

•

2. Heating blue copper hydroxide

•

3. Heating green copper carbonate

•

4. A glowing splint is exposed to the gas resulting from the thermal decomposition of HgO

•

5. Put a piece of sodium in the water

•

6. Place a piece of magnesium in a copper sulphate solution

•

7. Add sodium carbonate to dilute hydrochloric acid

•

8. Adding hydrochloric acid to copper

•

9. Adding an acid to an alkali

•

10. Substituting the hydrogen of an acid with a metal

•

11. Replacing iron filings with a piece of iron has the same mass when reacted with dilute hydrochloric acid

•

12. Increase the surface area of the reactants relative to the rate of the chemical reaction

•

13. Fragmented the reactants in the chemical reaction

•

14. Replacing dilute HCl with concentrated acid when it reacts with magnesium strip

•

15. Reaction of oil with caustic soda

•

16. Connecting two conductors with the same electric potential

•

17. The electric current intensity passing through a conductor in an electric circuit in 10 seconds is 2 amperes

•

18. The potential difference between the two ends of a conductor is 5 volts

•

19. Bringing a lit matchstick close to the mouth of a test tube containing red mercury oxide while heating it.

•

مراجعات النخبة

20. Absence or weakness of attractive forces in the atom between the nucleus and valence electrons.

.....

21. Crossing a pure yellow - seeded pea plant (YY) with a green - seeded pea plant (yy).

•

Question 7:

Compare between the following:

1. Ionic compounds and covalent compounds

Ionic compounds	covalent compounds
.....	
.....	

2. Positive catalyst and negative catalyst

P.O.C	Positive catalyst	negative catalyst
Definition		

3. The ammeter and the voltmeter

P.O.C	Ammeter	Voltmeter
1) Its symbol:		
2) Used for measuring:		
3) Type of connection in the electrical circuit:		
4) Measuring unit:		

4. The electric current intensity and the electromotive force :

P.O.C	electric current intensity	electromotive force (e.m.f)
1) Definition		
2) It is measured when		

5. Volt and coulomb, in terms of definition and the physical quantity they represent.

P.O.C	volt	coloumb
1) Definition		
2) physical quantity		

6. Ohmmeter and sliding rheostat

P.O.C	ohmmeter	sliding rheostat
importance		

7. Electrochemical cells and generators

P.O.C	Electrochemical cells	generators
definition		
type of the produced electric current		
examples		

8. Direct current and alternating current

P.O.C	Direct current	alternating current
definition		
source		

9. Dominant & recessive traits

Points of comparison	Dominant trait	Recessive trait
Definition		
Example		
The ratio of its appearance on mating an individual carries a pure dominant trait with another carries a recessive trait		
Purity of the trait		

10. Pure & hybride indeviduas

Pure individual	Hybrid individual
.....	

11. Simple goiter and exophthalmos

1-Simple goiter	2-Exophthalmic goiter
Reason	
.....	
Symptoms of the disease	
.....	

12. testis and ovary (in terms of hormones and its function)

Points of comparison	Testes	Ovaries
The produced hormones:		
The function		-

13. Dwarfism - Gigantism

1-Dwarfism	2-Gigantism
Reason	
.....	
Feature of disorder	
.....	

14. Glucagon and calcitonin

P.O.C	Glucagon	calcitonin
gland		
importance		

15. Compare the physical and genetic changes resulting from a person's exposure to a small amount of radiation over a long period (in terms of their effects).

a)

b)

Question 8:Variant questions:

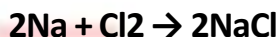
1. what is the importance of the chemical reactions ?

.....

.....

2. according to your study mention the names of the chemical compounds that give oxygen gas when thermally decomposed

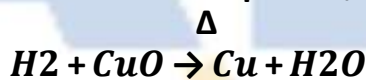
3. In the following reaction ,identify each of the and give the reasons?



- 1- The oxidizing agent is (.....) because (.....)
- 2- The reducing factor is (.....) because (.....)
- 3- Sodium has been (.....) because (.....)
- 4- Chlorine has been (.....) because (.....)

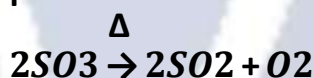
4. In the following reaction:

- Using arrows on the chemical equation, identify the oxidation and reduction processes.



- The oxidizing agent is: (.....)
- The reducing agent is: (.....)

3. The opposite figure shows the decomposition of sulfur trioxide to sulfur dioxide and oxygen and oxygen according to the following equation:

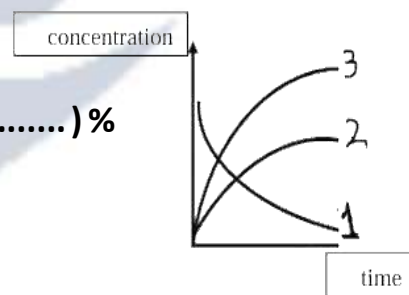


- 1- After the reaction ends , the SO_3 Concentration is (.....) %
- 2- State what each graphic line represents of the elements and compounds in the previous equation ?

The graph line (1) represents (.....)

The graph line (2) represents (.....)

The graph line (3) represents (.....)



4. In the opposite reaction

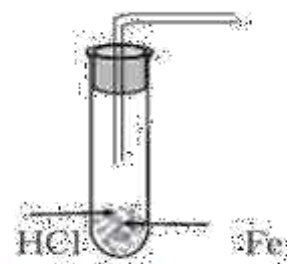
1- What happens when a piece of iron is replaced with iron filings has the same mass?

○

2- The factor affecting the speed of the chemical reaction when using iron filing instead of a piece of iron is (.....)

3- Illustrate the reaction with a balanced chemical equation ?

-

**5. Mention the use or importance of each of the following:**

1- Manganese dioxide

.....

2- Enzymes

.....

3- Ceramic cells in the catalytic converter

.....

4- Neutralization reactions

.....

6. What are the factors affecting the rate of a chemical reaction?

1-

a.

b.

2-

3-

4-

7. In light of what you have studied, identify the role of each of the following scientists: 1-

Watson and Crick

.....

2- Beadle and Tatum

.....

3- Mendel

.....

4- Johansen

.....

8. In the school laboratory, there are two test tubes: one contains diluted hydrochloric acid, and the other contains concentrated hydrochloric acid. How can you distinguish between them using two equal masses of magnesium?

.....

.....

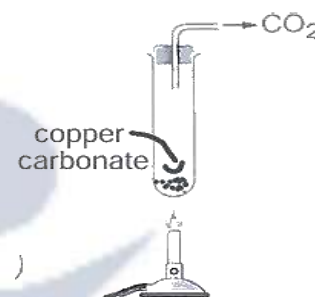
9. In the adjacent diagram, copper carbonate (green in color) is heated.

- Write the chemical equation representing the reaction:

.....

- How can the evolved gas be detected?

-



10. How can you obtain hydrogen gas using two different methods from your studies? Write the chemical equations.

First method: the simple substitution reaction between sodium and water. chemical equation :

second method: the simple substitution reaction between zinc and hydrochloric acid.

chemical equation :

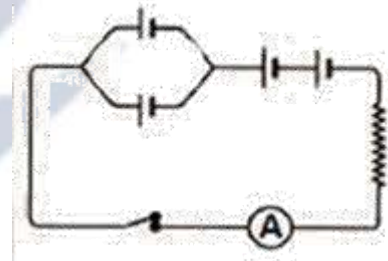
- 11.** If the work done to transfer an electric charge of 3 coulombs between two points in half minute is equal to 12 joules, calculate:
- a- The potential difference between the two points.
- b- The electric current intensity.
-
- 12.** Calculate the electric current intensity resulting from the passage of an amount of electricity is 6000 coulombs through a cross section of a conductor in 5 minutes.
-
- 13.** Calculate the time of passage of an amount of electric charge amounting to 25 coulombs if you know that the electric current intensity is 10 amperes.
-
- 14.** If the potential difference between the two ends of an electric source is 240 volts and the electric current intensity in it is 8 ampere, calculate the electric current intensity if it is connected to an electric source with a potential difference of 220 volt.
-
- 15.** Calculate the work done to transference an electric charge of 5 coulombs through a conductor if the potential difference between the two ends of the conductor is 3 volts.
-
- 16.** If the potential difference between the two ends of an electric source is 100 volts, calculate the amount of electricity transferred when this electric source does work of 200 joules.
-

- 17.** Explain with a diagram how to connect a voltmeter to measure the potential difference between the two terminals of an electric lamp and between the two terminals of the electric source, and mentioning the function of the voltmeter in each circuit.
-

- 18.** You have three identical electric cell, each has electromotive force of 1.5 volts. Explain with a drawing how they can be connected to obtain an electromotive force (1.5 volts - 3 volts - 4.5 volts)
-
-
-

- 19.** a- Illustrate with a diagram the electrical circuit used to practically implement Ohm's law, and write the mathematical formula for the law.
-
-

..... b- calculate the electric current intensity in the following circuit, if the e.m.f of each cell is equal 3 volt and the resistance is equal 30 Ohm.



- 20.** You have four electric poles of 2.5 volts each, explain how you can get batteries for them:

1) 10V 2) 7.5V 3) 5V in two ways

.....

.....

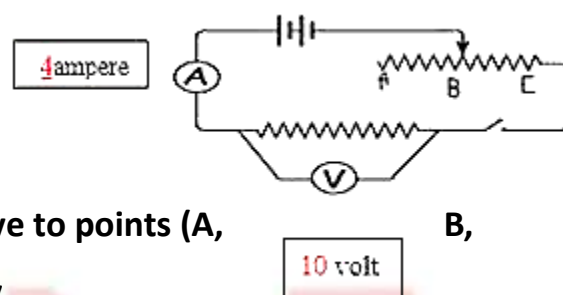
21. If the switch are close:

1- Find the value of the fixed resistance.

○

2- Explain where the rheostat should be placed relative to points (A, and C) to obtain the greatest electric current intensity.

○



22. Study the opposite figure and then, answer the following:

1) Type of resistance(X)

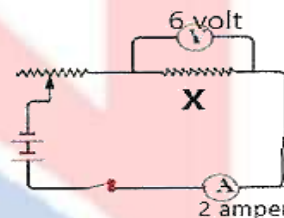
.....

2) Value of resistance =

..... Ohm

3) The amount of electricity passing through resistance (X) in half a minute =

..... Coulombs.



23. Calculate the e.m.f. of each battery :

.....			

24. A conductor has a resistance of 44 ohms and the amount of electricity flowing in 1 second is 5 coulombs. Calculate its potential difference.

-

25. If the work done required to transfer 40 coulombs is equal 20 joules through a wire with a resistance equal 10-ohm, calculate the electric current flowing through the wire?

-

.....

26. A recorder operates at a voltage of 9 volts. It is desired to operate it using several batteries, each with an electromotive force of 1.5 volts. What is the minimum number of batteries that can be used?

.....

.....

27. A conductor with a resistance of 50 ohms and the amount of difference electricity flowing in it is 40 Coulombs and the potential between the terminals of 250 volts Calculate the time required for the flow of the amount of electricity.

.....

.....

28. If a 2- ampere electric current passes through a wire with a voltage difference between its two ends of 220 volts, calculate the impedance encountered by the current while passing through the wire.

.....

.....

29. Two metal wires of the same material resistance of the second wire three times the first and the length of the first wire was 2 meters and its resistance was 1 ohm, so calculate the resistance and length of the second wire.

.....

.....

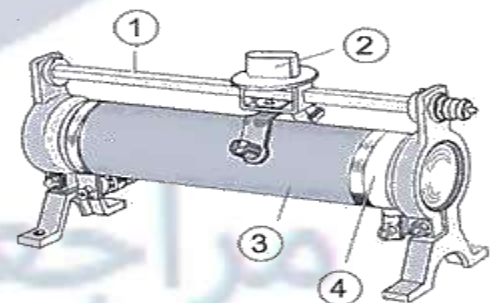
30. From the opposite figure:

(a) What is the name of this instrument? (.....

(b) Label the instrument.

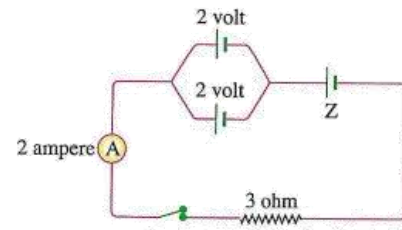
.....

(c) How can it be used as a fixed resistance? (.....)



31. By using the given figure:

Calculate the electromotive force (e.m.f.) (E) of the cell knowing that the ammeter reading is (2 amperes) and the resistance is (3 ohms).



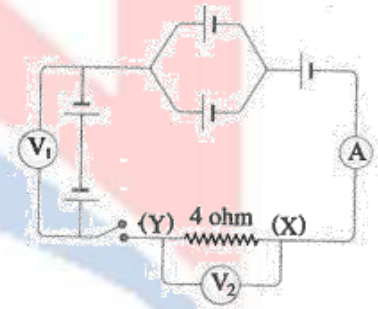
32. In the opposite figure:

Five similar electric cells, e.m.f. for each 3 volts.

1. What is the reading of the voltmeter?

V1 =

V2 =



2. When the key (K) is closed, calculate:

The work done to transfer quantity of charges between the two points (X and Y) through two minutes.....

33. Study the opposite two figure, then answer the questions below

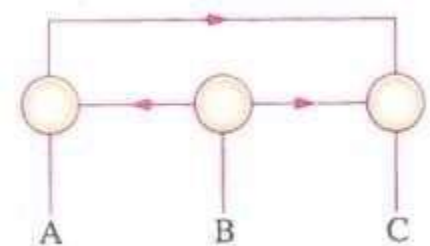
each figure: You have three electric conductor A, B, C

a. Arrange these conductors in descending order according to the electric potential of each of them.

-

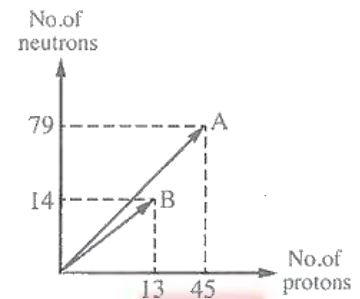
b. Mention the name of the apparatus used in decreasing electric potential

-



34. In the opposite figure,
the element..... it is radioactive, because

.....
.....



35. Suha has two long-haired cats: one is purebred for the long hair trait, and the other is heterozygous. (Long hair is a dominant trait.)

- How can you distinguish between them by mating each with a short-haired cat? According to the genetics principle the impure long hair trait will produce 50% of its generation for the long hair trait and 50% for the short hair trait, while the pure long hair trait will produce 100% for the long hair trait only.

.....
.....

36. How many pea plants with red flowers and white flowers result from crossing a pea plant with genotype (RR) with another plant of genotype (Rr), if the total number of resulting plants is 300?

.....
.....

37. When two pea plants are crossed, one with red flowers and the other with white flowers, the offspring appeared with 50% white flowers Explain, based on genetics, the genotype of both the parents and the resulting offspring, knowing that the dominant gene is represented by R and the recessive gene by r.

.....
.....

38. From the two following figures, answer the following questions:

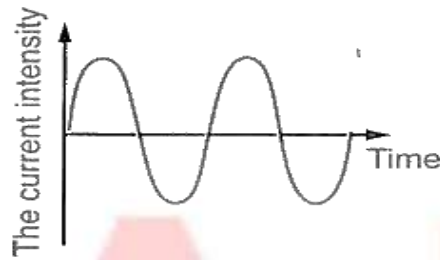


Fig. (1)

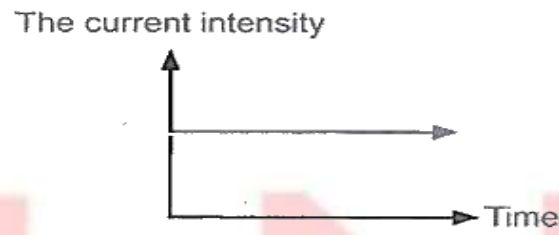


Fig. (2)

(a) What is the type of current in each figure?

-

(b) How can you obtain each of them?

--

(c) Mention the use of each current.

--

(d) Which of the two graphs expresses the current that is able to transmit for long distances?

- -

39. In the beet plant, the swollen roots factor M is predominant on the weak roots factor, and the red color factor R is predominant on the white color factor Find the genetic and phenotypic structures of the parents if the result is 3 individuals with red.

-

.....

.....

40. Explained genetically, the hybridization in *Drosophila* occurs between a male and a female, each with long wings, resulting in 27 long-winged individuals and 9 short-winged individuals. If you know that the symbol for long wings is (T) and short wings is (t).

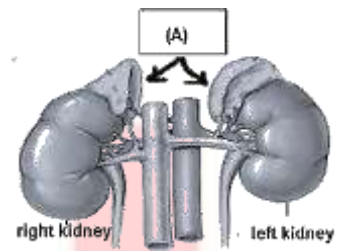
-

.....

.....

41. From the opposite figure, mention:

- 1- The name of the gland?
- 2- The name of the hormone which is secreted from the gland?
.....
- 3- The function of the hormone secreted by the gland?
.....
- 4- What is the name of the gland that controls the secretion of gland (A)?
.....



42. What is meant by each of the following

- 1- The rate of chemical reaction :-
- 2- The catalytic converter
- 3- Enzymes :-

مراجعات النخبة

Question 1:Choose the correct answer:

1. When heating copper hydroxide, we get
 a) copper carbonate and water vapor
 b) **copper oxide and water vapor**
 c) copper and hydrogen
 d) copper oxide and hydrogen
2. Some metal nitrates decompose with heat into
 a) **metal nitrite and oxygen**
 b) metal nitrate and oxygen
 c) nitric oxide and hydrogen
 d) metal nitrate
3. When heating red mercury oxide, it decomposes into
 a) oxygen
 b) mercury
 c) **oxygen and mercury**
 d) there is no correct answer
4. Almost metal carbonates decomposed by heating into metals and
 a) O₂
 b) NO₂
 c) **CO₂**
 d) SO₃
5. One of the benefits of chemical reactions in our lives is
 a) manufacturing of medicine
 b) artificial fibers industry
 c) Fertilizer industry
 d) **All of the above**
6. Carbon dioxide gas is evolved when the is decomposed by heating.
 a) Cu(OH)₂
 b) **CuCO₃**
 c) CuSO₄
 d) HgO
7. Thermal decomposition of blue copper sulfate gives copper oxide and gas.
 a) Sulfur dioxide
 b) **Sulfur trioxide**
 c) Oxygen
 d) Sulfur
8. The following chemical equation :- $2\text{NaNO}_3 \rightarrow 2\text{NaNO}_2 + \text{O}_2$ represents a reaction of
 a) Simple substitution
 b) Double substitution
 c) **Thermal decomposition**
 d) Neutralization
9. The airbag contains the sodium compound.
 a) Sulfate
 b) **Azide**
 c) Oxide
 d) Carbonate
10. Active metals replace the hydrogen of water, producing and hydrogen gas evolved.
 a) **metal hydroxide**
 b) metal oxide
 c) metal carbonate
 d) metal sulphate
11. The percentage of hydrogen increases during reactions.
 a) neutralization
 b) oxidation
 c) **reduction**
 d) thermal decomposition
12. When copper are added to dilute hydrochloric acid,
 a) Copper hydroxide is formed
 b) copper carbonate is formed
 c) **copper chloride is formed**
 d) **no reaction occurs**
13. When a sodium chloride solution reacts with a silver nitrate solution, a precipitate of silver chloride is formed.
 a) red
 b) **white**
 c) reddish-brown
 d) blue

14. When copper sulphate is heated, a color.....is formed.

- a) **black** b) green c) blue d) red

15. The oxygen (O₂) evolves by heating.....compound.

- a) **NaNO₃** b) CuSO₄ c) CuCO₃ d) Cu(OH)₂

16. All of the following compounds give black precipitate on heating except

- a) **HgO** b) Cu(OH)₂ c) CuCO₃ d) CuSO₄

17. Double substitution reactions between two salt solutions are accompanied by formation of

- a) a metal. **b) a precipitate.** c) an oxide. d) a non-metal.

18. When we put an acid in a test tube containing caustic soda,.....produced.

- a. Only ionic compound is. c. **Both ionic and covalent compounds are.**
b. Only covalent compound is. d. No reaction occurs.

19. All the following elements replace hydrogen of the diluted acid except.....

- a) Al b) Zn c) **Au** d) Sn

20. On adding copper turnings to diluted hydrochloric acid,..... is produced

- a. copper hydroxide c. copper chloride
b. copper carbonate d. **no reaction**

21. Sodium metal can replace all of the following metals from their salt solutions except

- a. copper. **b. potassium.** c magnesium. d. zinc

22. When hydrochloric acid reacts with sodium carbonate, the reaction produces gas which...

- a. **Turbid limewater.** c. increases ignition.
b. Burns with a pop sound. d. Makes its color red

23. During the reaction between hydrogen and black copper oxide, a process.....occurs for copper oxide.

- a) oxidation c) oxidation and reduction
b) **reduction** d) no reaction

24. All of the following represents the reduction process except.....

- a. decreasing oxygen. b. **gives up electrons.**
c. gains electrons. d. combination with hydrogen

25. The change numberrepresents the reduction process.

- a. $\text{Zn} \rightarrow \text{Zn}^{++}$ b. $2\text{Br}^- \rightarrow \text{Br}_2$
c. **$\text{Cu}^{++} \rightarrow \text{Cu}$** d. $2\text{O}^{--} \rightarrow \text{O}_2$

26. According to the chemical activity series, magnesium is more reactive than

- a) sodium **b) zinc** c) potassium d) calcium

27. The reaction of fireworks is one of the reactions

- a) **Very fast** b) Relatively fast c) Relatively slow d) Very slow

28. The chemical formula of nitrogen pentoxide gas
a) N_2O_2 b) N_2O_5 c) N_2O_4 d) N_5O_2
29. The unit of measurement for the concentration of reactants or substances resulting from a chemical reaction
a) mol/s b) mol x liters c) mol / liter d) liters / mol
30. The reaction of oil with caustic soda is one of the.....reactions.
a) Fast b) Relatively slow c) Very slow d) Very very slow
31. At the beginning of the chemical reaction, the concentration of the reactants is.....
a) 100% b) Zero c) 50% d) 25%
32. The time required to complete reactions of ionic compounds the time required to complete the reactions of covalent compounds under the same reaction conditions.
a) Greater than c) Equal to
b) Less than d) There is no correct answer
33. The reaction of silver nitrate with sodium chloride is one of the..... reactions
a) Fast b) Medium c) Slow d) Very slow
34. The speed of the reaction of sodium chloride solution with silver nitrate solution is measured by the rate of appearance of aprecipitate
a) Sodium nitrate c) Silver nitrate
b) Sodium chloride d) Silver chloride
35. From the factors affecting the speed of a chemical reaction
a) Concentration of reactants c) Temperature
b) Nature of reactants d) All of the above
36. Increasing the concentration of the reactants(temperature) during a chemical reaction makes the number of collisions between molecules
a) Decreases by a quarter b) Increases c) Is not affected d) Decreases by half
37. The substance that decrease the reaction rate and does not change is called.....
a) Oxidizer b) Reductant c) Positive catalyst d) Negative catalyst
38. All of the following are from the properties of the catalyst except
a) Its mass decreases
b) It binds to the reactants during the reaction and then separates from them.
c) It changes the reaction rate.
d) It does not undergo a chemical change.
39. The rate of decomposition of hydrogen peroxide increases by the addition of
a) Manganese oxide b) A piece of potato c) Manganese dioxide d) B, C together.

40. The number of collisions between molecules increases and so the rate of the chemical reaction increases
- a) Increase in temperature. c) Increase in concentration of reactants.
b) Increase in concentration of products. d) A, C together
41. When the temperature of the chemical reaction increases, the rate of the reaction increases due to the increase in
- a) The surface area exposed to the reaction.
b) The number of reacting molecules.
c) The number of possible collisions between molecules.
d) The number of reacting atoms.
42. Enzymes work..... in many biological processes.
- a) As oxidizing agents c) As reducing agents
b) As disinfecting agents d) As catalysts
43. All of the following affect the speed of a chemical reaction except
- a) Concentration of reactants c) Nature of products
b) Nature of reactants d) Reaction temperature
44. Iron filings react with diluted hydrochloric acid faster than a piece of iron that has the same mass due to the.....
- a) increase concentration. c) increase in surface area.
b) presence of a catalyst. d) increase in temperature.
45. On the reaction of 1gm of pieces of calcium carbonate with hydrochloric acid, its concentration is 1 mole/liter a known volume of CO₂ gas evolves in 60 sec., on repeating the same experiment by using 1gm of pieces of calcium carbonate with hydrochloric acid, its concentration is 2 mole/liter, the same volume of the CO₂ gas evolves in sec.
- a) 30 b) 60 c) 120 d) 180
46. ... is used in polishing metals.
- a. Sodium carbonate a. Sodium bicarbonate
a. Sodium hydroxide a. Sodium azide
47. The electric charge which transferred by electric current equal (1) ampere per second is called ..
- a) Ohm b) Coulomb c) Volt d) Ampere
48. Volt =
- a) Coulomb / Joule c) Ohm / Ampere
b) Coulomb / Second d) Joule / Coulomb
49. The reading of the voltmeter between two poles of the battery in the open circuit indicates
- a) Current intensity c) Electrical resistance
b) Potential difference d) Electromotive force
50. The flow of electric charges through a metal wire in a closed electric circuit represents
- a) Electrical resistance b) Electric current c) Potential difference d) Electric current intensity

51. A device is used to measure the electric current intensity.
 a) Ohmmeter b) Voltmeter **c) Ammeter** d) Rheostat
52. If the amount of electricity passing through a conductor is reduced to half, then the intensity of the electric current is at a constant time
 a) **It decreases by half** c) It increases by four times
 b) It increases by double d) It does not change
53. An electrical quantity is measured in the unit of . .
 a) **Coulomb** b) Joule x Volt c) Ohm d) Volt
54. The ampere is equivalentt
 a) Joule x second c) Joule / second
 b) **Coulomb / second** d) Joule / Coulomb
55. To transfer an electric charge of 10 coulombs between two points with a potential difference of 20 volts between them, the work done to transfer it is equalJoules
 a) $\frac{1}{2}$ b) 2 c) 20 **d) 200**
56. Potential difference(e.m.f) is measured in units of
 a) Ampere b) Ohm **c) Volt** d) Joule
57. If the amount of work done is doubled, then the electric potential difference Will..... when the amount of electricity is constant.
 a) increases four time. c) decreases by half.
b) increases twice d) decreases by a quarter.
58. If the Attraction force between nucleus and electrons is vanished, electrons will become
 a) localized **b) free** c) static d) all the pervious
59. In the electrical cell,..... energy is transformed into electrical energy.
 a) Magnetic b) Kinetic c) Sound **d) Chemical**
60. The nuclear reactions taking place in..... it cannot be controlled.
 a) Nuclear reactors b) turbines **c) atomic bombs** d) medical laboratories
61. The radiologist should not be exposed to radiation in amounts more than...milli sievert per year.
 a) 5 b) 10 c) 15 **d) 20**
62. The ratio between the potential difference between the two ends of a conductor and the current flowing through it expresses
 a) Electromotive force c) Electric current
b) Electrical resistance d) Quantity of electricity
63. The product of the intensity of the current flowing in a conductor and the time of flow of this current produces a physical quantity measured in units of
 a) ampere **b) coulomb** 7 c) ohm d) volt

64. If the electric current passing through an electrical resistance of 5 ohms doubles, the resistance value will be:

- a) **5 ohm** b) 10 ohm c) 40 ohm d) 20 ohm

65. Which one of the following figures represents a part of an electrical circuit that contains an ammeter and voltmeter connected in the right way?



66. We can control the value of the current intensity that passes in the different parts of the circuit by using the.....

- a) ammeter b) voltmeter c) **rheostat** d) ohmmeter

67. We can control the value of the electric resistance by using.....

- a) ammeter b) voltmeter c) **rheostat** d) ohmmeter

68. The is used to measure the electrical resistance.

- a) ammeter b) voltmeter c) rheostat d) **ohmmeter**

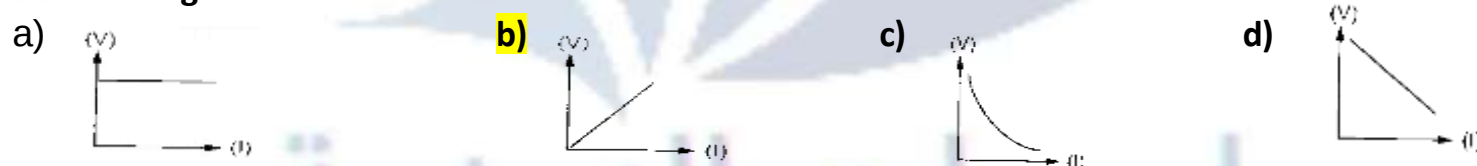
69. According to Ohm's law at constant temperature, if the potential difference between terminals of a conductor is doubled so the resistance of this conductor is.....

- a) doubled. b) **remain constant** c) decreases to half. d) increases 4 time

70. The value of the resistance of an electrical conductor in an electrical circuit is changed on changing.....

- a) **Dimensions of the conductor.**
b) Electric current intensity passing through it.
c) Quantity of electric charges passing through it.
d) Time of connection

71. The diagram verifies Ohm's law.



72. Direct current can be produced from

- a) **electrochemical cells** c) electric power stations
b) electric generators d) electric motors

73. Alternating current is used in

- a) electrolysis b) **lighting house** c) electroplating d) both a & c

74. One of the properties of the direct current is.....

- a) change value. d) change direction.
b) **constant value and direction.** c) change value and direction

75. In dynamo, ... energy is converted into electric energy.

- a) Magnetic **b) Kinetic** c) light d) Chemical

76. From the examples of electrochemical cells is.....

- a) ohmmeter. b) rheostat c) dynamo. **d) dry cell.**

77. The radioactive phenomenon was discovered by the scientist.....

- a) Ohm. b) Volt **c) Becquerel.** d) Ampere.

78. is a non-radioactive element.

- a) Radium **b) Iron** c) Uranium d) Zirconium

79. The effects of radiation are a result of changing the sex chromosomes of the cells

- a) physical **b) genetic** c) cellular d) chemical

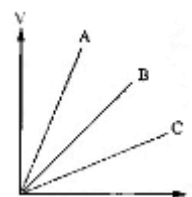
80. The first which is affected by exposure to large dosages of radiation for a short time is.....

- a) stomach. b) larynx. **c) bone marrow.** d) two lungs

81. The measuring unit of the absorbed radiation is the

- a) Curie. **b) Sievert.** c) Rontgen. d) Ohm

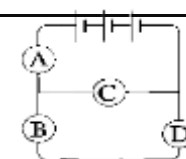
82. The opposite figure shows the relationship between potential difference and electric current intensity for three different wires. We show that the resistance of wire number is more than the other two wires.



- a) **A** b) B c) C d) no correct answer

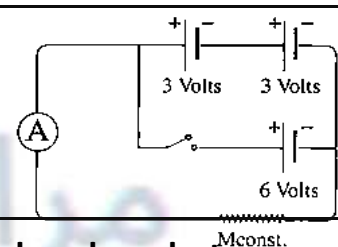
83. In the opposite figure of an electric circuit, when the bulb number..... is burnt, all lamps will put off.

- a) **A** b) B c) C d) D



84. When the switch is closed in the opposite circuit, the ammeter reading.....

- a) **doesn't change.** c) decreases to half.
b) increases to double. d) increases four times.



85. If two conductors are connected by a copper wire, conductor (A) of 6600 coulomb and conductor (B) of 3300 coulomb, then the electric charges.....

- a) pass from conductor (B) to conductor (A). not pass in any direction.
b) **pass from conductor (A) to conductor (B).** c) pass in both directions.

86. The mathematical relationship of Ohm's law is.....

- a) $R = V/I$ b) $I = RV$ c) $R = V \times I$ d) $V = R/I$

87. Rockets usefuel for flying.

- a) gasoline b) kerosene c) natural gas d) nuclear

88. Cosmic radiation is fromsources of radiation pollution.

- a) natural b) artificial c) industrial d) no correct answer

89. The nuclear energy is peacefully used in the industrial field to convert sand tofor manufacturing computer processors.

- a. electric energy b. silicon sheets c. nuclear fuel d. atomic bombs

90. On connecting 5 electric cells have the same electromotive force on parallel, the e.m.f of each cell is 2.5 volts, so the total e.m.f equals..... volts.

- a) 2.5 b) 5 c) 7.5 d) 12.5

91. According to Mendel's second law, each pair of hereditary traits is inherited independently and appears in the second generation at a ratio of

- a) 1:1 b) 2:1 c) 3:1 d) 1:4

92. From the dominant traits in humans that follow Mendelian inheritance are

- a) Freckles on the face b) Wide eyes c) Soft hair d) Absence of dimples

93. The chemical composition of a chromosome is DNA and

- a) Carbohydrates b) Protein c) Fats d) Water

94. A gene controls the appearance of the genetic trait by producing.....

- a) Hormone b) Enzyme c) Chromosome d) A and C together

95. The genetic structure of a short-stemmed, white-flowered pea plant is

- a) ttTT b) TTrr c) ttrr d) TTRR

96. All of the following are dominant traits in humans except.....

- a) Curly hair c) wide eyes
b) The presence of a moustache d) Ability to rolling tongue

97. The two scientists who discovered how the gene works are.....

- a) Watson and Crick c) Hershey and Chase
b) Beadle and Tatum d) Mendel and Tatum

98. From the dominant traits in humans are.....

- a) Smooth hair b) dimples c) freckles d) black eyes

99. The genotype of a pea plant with wrinkled, yellow seeds is.....

- a) yyRR b) YYRR c) yyrr d) YYss

100. When a tall-stemmed, red-flowered pea plant is crossed with a pure, short-stemmed, white-flowered pea plant, the first generation produces all plants that have.....

- a) Tall-stemmed, red-flowered
 b) Tall-stemmed, white-flowered
 c) Short-stemmed, red-flowered
 d) Short-stemmed, white-flowered

101. Genetically modified rice contains...

- a) Vitamin A
 b) Folic acid
 c) Carotene
 d) Melanin

102. Mendel has covered.....of the pistils in order cross-pollinate from other flowers.

- a) Stamens
 b) stigmas
 c) sepals
 d) petals

103. Mendel removed the stamens of plant flowers before the anther becomes mature to prevent...

- a) self-pollination.
 b) Cross pollination.
 c) artificially pollination.
 d) cross and artificial pollination together

104. According to Mendel's first law, the hereditary factors.....when gametes are formed.

- a) combine
 b) fuse
 c) segregate
 d) disappear

105. The recessive trait appears on one of the sons, if he is inherited...from their parents.

- a) two dominant genes
 b) only one dominant gene
 c) two recessive genes
 d) a recessive gene and a dominant gene

106. The gene which prevents the appearance of the effect of the other gene is known as

- a) homozygous.
 b) heterozygous.
 c) dominant.
 d) recessive.

107. The two factors of a hereditary trait are similar in theindividual.

- a) pure
 b) hybrid
 c) recessive
 d) (a) and (c)

108. If two hybrid individuals cross with each other, 300 individuals are produced due to this crossing, so the number of the hybrid individuals among offspring may be individual.

- a) 50
 b) 100
 c) 150
 d) 200

109. If the genetic structure of one of the producing individuals is (aa), the genetic structure of the parents may be.....

- a) Aa x AA
 b) AA x AA
 c) aa x Aa
 d) aa x AA

110. According to Mendel's second law, the recessive trait appears in the second generation at a percentage of.....

- a) 25%
 b) 50%
 c) 75%
 d) 100%

111. Mendel's second law is known as the law of factors.

- a) independent assortment
 b) segregation
 c) merging
 d) disappearance

112. Which one of these traits is recessive in humans?

- a) Curly hair.
 b) Wide eyes.
 c) Free ear lobe.
 d) Straight hair

113.is/are the part(s) of DNA present on the chromosomes and control the hereditary traits of the individuals.

- a) Genes
 b) Gametes
 c) Cytoplasm
 d) Nucleus

114. Mendel let the pea plant several times to ensure the purity of the traits.

- a) Artificially **b) Self-pollinated** c) Cross-pollinated d) All of the above

115. The trait .is always pure.

- a) Acquired b) Genetic c) Dominant **d) Recessive**

116. In one of the plants, the white fruit color gene (W) is dominant over the yellow fruit gene (w).

The plant with white fruit was crossed with the plant with yellow fruit. About half of the offspring had white fruit and the other half had yellow fruit. The genotype of the parents is:.....

- a) WW x Ww b) WW x ww **c) Ww x ww.** d) ww x ww.

117. The percentage of offspring that carry a recessive trait for two parents who are both hybrid is%

- a)0 **b)25** c) 50 d)75

118. According to Mendel's law, genetic traitsduring the fertilization.

- a) multiply b) separate **c) aggregate** d) disappear

119. Mendel conducted his experiments in pea plant by using..... pairs of traits.

- a)5 **b)7** c) 9 d)11

120. DNA molecule consists ofstrands.

- a)2** b)3 c) 4 d)5

121. If a pollination takes place between 2 hybrid individuals, the product is 60 individuals, so the number of produced hybrid individuals may be individual.

- a)15 b)50 **c) 30** d)10

122. The hormone which regulates the level of calcium in blood is thehormone.

- a) calcitonin** b) thyroxin c) progesterone d) adrenalin

123. The..... hormone liberates the needed energy from the food stuff.

- a) growth b) estrogen **c) thyroxin** d) adrenalin

124. The hormone, whose deficiency causes the enlargement of the thyroid gland is.....

- a) estrogen. b) insulin. **c) thyroxin.** d) d. glucagon

125. The hormone which stimulates the release of glucose sugar from the liver is the... hormone.

- a) thyroxine b) insulin c) estrogen **d) glucagon**

126. In an experiment, a researcher eradicates (removes) a pancreas from a rat. Which symptoms could appear on this rat?

- a) **Diabetes.** c) Exophthalmic goiter.
b) Gigantism. d) Simple goiter

127.element shares in composing thyroxin hormone.

- a) **Iodine** b) Iron c) Sodium d) d. Calcium

128. The hormone responsible for the appearance of male secondary sex characters is the..... hormone.

- a) progesterone **b) testosterone** c) adrenalin d) growth

129. The hormone responsible for the appearance of the female secondary sex characters is the..... hormone.

- a) progesterone **b) estrogen** c) adrenalin d) testosterone

130. Sever damage of.....gland, may cause death.

- a) parathyroid b) thyroid c) ovary **d) pituitary**

131. The effect of the decrease of glucagon hormone secretion, is similar to.....

- a) The decrease in insulin hormone secretion.
b) The increase in insulin hormone secretion.
 c) The decrease in calcitonin hormone secretion.
 d) The increase in calcitonin hormone secretion

132. The hormone which stimulates the body's organs to respond to emergencies is.....

- a) insulin. b) glucagon. c) estrogen. **d) adrenalin**

133. The..... is the only way for hormones to reach the target cells

- a) saliva **b) blood** c) water d) ducts

134. The hormone that promotes the growth of endometrium is the hormone.

- a) Testosterone **b) progesterone** c) estrogen d) growth

135. Both the hormone insulin and the hormone glucagon agree in.....

- a) Increased blood glucose c) function
 b) Installation **d) contradicts the function**

136. The adjective of freckles is expressed by the symbol

- a) Rr **b) rr** c) Ww d) RR

137. A pea plant that is tall with white flowers and has the genotype (Tt rr). Which of the following represents one of its gametes after the segregation of factors?

- a) Tt b) Rr **c) Tr** d) t



Question 2:

Put (✓) or (×):

1	Hydrochloric acid reacts with sodium carbonate and the gas released turbid the clear lime water.	(✓)
2	When hydrochloric acid is added to copper , no reaction occurs	(✓)
3	Chemical reaction is the breaking up of bonds in the products molecules from the reaction and formation of new bonds in the reactant's molecules.	(×)
4	Copper replaces magnesium in its salt solutions.	(×)
5	Potassium reacts with water momentarily.	(✓)
6	Oxidation and reduction reactions occur separately from each other.	(×)
7	Oxidation is a chemical process in which an element loses one or more electrons.	(✓)
8	The chlorine atom turns into a chloride ion when it loses an electron from its outer energy levels.	(×)
9	The transformation of Fe^{+2} into Fe^{+3} it is considered a reduction process	(×)
10	The reactions of ionic compounds are faster than covalent compounds	(✓)
11	The chemical formula of Nitrogen pentoxide gas is N_5O_2 .	(×)
12	The reaction of oil with caustic soda is considered a very rapid reaction.	(×)
13	The time of reaction to form soap is more than the time of iron rusting reaction.	(×)
14	The hexagonal ceramic cells used in catalytic converter to decrease the exposed surface area of reaction.	(×)
15	The unit of measurement of the amount of electric charge is amperes × seconds .	(✓)
16	The electric current passes through the electric conductor when the electric potential of its two terminals are equal.	(×)
17	The electromotive force for three dry cells connected in parallel equals third of electromotive for three dry cells connected in series.	(✓)
18	In electric cells and batteries, chemical energy is converted into electrical energy.	(✓)
19	Dynamo produces an alternating electric current.	(✓)
20	Connecting electrical poles in series increases the intensity of the current generated in the electrical circuits when the resistance is constant.	(✓)
21	The e.m.f of several cells which are connected in series is equal to the e.m.f of one cell.	(×)
22	The spleen is damaged, on exposing the human for a large dosage through short period of time.	(✓)
23	Bone marrow is the first which is affected by nuclear radiation.	(✓)

24)	The chemical composition of hemoglobin changes due to radiation exposure, making it unable to carry nitrogen.	(×)
25)	The acquired traits are transmitted from one generation to another.	(×)
26)	The individual that inherits just one gene for facial freckles trait from one of their parents, the trait does not appear on him.	(✓)
27)	Mendel removed petals from the pea plant's flowers to ensure that the plant does not self-pollinate.	(×)
28)	The ratio of TR gametes is 75% in a plant whose genetic structure is TtRr	(×)
29)	When a pure short stem pea plant is pollinated with a hybrid long stem one, all the plants produced are short stem.	(×)
30)	The free ear lobe is a dominant trait.	(✓)
31)	The presence of cheek dimples is a recessive trait.	(×)
32)	Genes are parts of DNA found in the cytoplasm of the cell.	(×)
33)	The genes control the appearance of hereditary traits of the living organism by producing vitamins.	(×)
34)	The protein responsible for the appearance of brown eyes is no different from the protein responsible for the appearance of curly hair.	(×)
35)	Iodine is a component of the hormone thyroxine.	(✓)
36)	Target cells are usually located near the gland that secretes the hormone targeting them.	(×)
37)	gigantism disease is a continuous growth in the bones of the skull as a result of lack of growth hormone in childhood	(×)
38)	Gigantism occurs due to the increase of secretion of calcitonin hormone	(×)
39)	Thyroid gland secretes a hormone that regulates the growth and development of sexual organs in the human body.	(×)
40)	Thyroxine is a chemical message that controls and regulates some vital activities and functions in the body	(✓)
41)	The calcitonin hormone controls the level of calcium in the human body.	(✓)
42)	The iron element is shared in composing thyroxine hormone.	(×)
43)	Enzymes work with the nervous system to regulate and coordinate the body's various activities and functions.	(×)

Question 3:Complete the following statement:

1)	The compound decomposes by heat into its simple components in reactions of thermal decomposition
2)	Most sulphate metals decomposed by heating into metal oxide and sulfur trioxide gas.

3)	Air bag is considered one of the most important safety means in modern cars , as it is filled with Nitrogen gas
4)	CO_2 gas turbid the clear lime water , while O_2 gas increases the glowing splint.
5)	When an acid reacts with an alkali , it produces Salt and water
6)	$2Al + 6HCl \rightarrow 2AlCl_3 + 3H_2 \uparrow$
7)	$Mg + CuSO_4 \rightarrow MgSO_4 + Cu \downarrow$
8)	In the series of chemical activity , the metals are arranged in the descending order according to chemical activity
9)	Some metals react with water and produce , metal hydroxide and hydrogen gas is evolved.
10)	Copper is an element that does not replace the hydrogen of the acid.
11)	The reaction of acids with alkalis is a type of the neutralization reaction.
12)	Potassium reacts with diluted hydrochloric acid to form potassium chlorid (KCl) and hydrogen(H_2) gas is evolved.
13)	The reaction of zinc with hydrochloric acid is considered a simple substitution reaction , while the reaction of sodium carbonate with the same acid is a double substitution reaction
14)	When magnesium replaces copper in its salt solutions , a red color precipitation is formed
15)	A substance that loses one or more electrons during a chemical reaction is known as Reducing agent metal
16)	Oxidation and reduction are two concurrent processes
17)	When hydrogen gas is passed over hot copper oxide , the copper oxide turns into red copper metal and the water vapor is formed
18)	The change in the concentration of reactants and products per unit time is called speed of a chemical reaction
19)	The speed of a chemical reaction is measured practically by the rate of appearance of one products or the disappearance of one of reactants
20)	The reaction of sodium chloride powder is faster from the reaction of a cube of sodium chloride which has the same mass
21)	The factors affecting the rate of a chemical reaction are (the nature of the reactants) , (concentration of the reactants) , (temperature of the reaction) and (Catalysts)
22)	Iron rusting is considered a Very slow reaction , while the fireworks reaction is a very fast reaction
23)	At the beginning of the chemical reaction , the concentration of the reactants is while the 100% and the concentration of the products is zero%
24)	the nature of the reactants depends on the kind of bond and the surface area exposed to reaction

25]	The rate of hydrogen peroxide decomposition can be increased by adding manganese dioxide or by adding a piece of sweet potato
26]	Catalytic agents such as platinum or Iridium or palladium are used in the catalytic converter and they work on increasing the speed of reaction of the treatment of harmful gases emitted from the car engine
27]	Sweet potatoes produce Oxidase enzyme which increases the speed of the decomposition of hydrogen peroxide H_2O_2
28]	The catalyst changes the speed of the chemical reaction without affecting the beginning or stopping reaction.
29]	In most modern cars have Catalytic converter to treat harmful gases resulting from fuel combustion before they are expelled
30]	When a positive catalyst is used, the amount of energy required for the chemical reaction to occur decreases and its mass doesn't change .
31]	Uses a device voltmeter To measure the electric potential difference in electrical circuit, And uses a device electric transformer (setp-down transformer) to convert the voltage from 220 volts to 110 volts.
32]	When mating a male and a female with their genetic makeup (Bb), the ratio of hybrid individuals to the ratio of The resulting pure individuals are 50%: 50%
33]	In pea plants, the green color is dominant over yellow color pod. , while the yellow color is dominant over green color seed
34]	If a male and a female both have the genotype Bb , the ratio of offspring with genotype BB to total offspring is 25%
35]	reproductive glands begin to secrete their hormones around the age of puberty.

Question 4:Write the scientific term:

- 1) The breaking bonds between the molecules of the reactants and forming new bonds between the molecules of the molecules resulting from the reaction. (**chemical reaction**)
- 2) Chemical reactions in which the thermal compound decomposes into its primary elements or simple compound (**Thermal decomposition reaction**)
- 3) Cells through which genetic factors are transmitted from parents to children (**gametes**)
- 4) Arranging the metallic elements in descending order according to their chemical activity (**activity series.(C.A.S)**)
- 5) A chemical reaction in which one element is replaced by another element that is more chemically active. (**simple substitution reaction**)

Question 5:Give reasons for the following:

1. A Silver color appears when red mercury oxide is heated
 - Due to decomposition of red mercuric oxide by heating into mercury (silvery color) and oxygen gas evolves $2HgO \xrightarrow{\Delta} 2Hg + O_2 \uparrow$.
2. A black substance is formed when green copper carbonate is heated strongly
 - Due to decomposition of green copper carbonate by heating into copper oxide (black) and carbon dioxide gas evolves. $CuCO_3 \xrightarrow{\Delta} CuO + CO_2 \uparrow$
3. A black color appears when blue copper sulfate is heated
 - Due to decomposition of blue copper sulphate by heating into copper oxide (black) and Sulphur trioxide gas evolves. $CuSO_4 \xrightarrow{\Delta} CuO + SO_3 \uparrow$
4. The color of sodium nitrate changes to yellowish white by heating
 - Due to decomposition of white sodium nitrate by heating into sodium nitrite (yellowish white) and oxygen gas evolves. $2NaNO_3 \rightarrow 2NaNO_2 + O_2 \uparrow$
5. A black substance is formed when green copper carbonate is heated strongly
 - Due to decomposition of green copper carbonate by heat into copper oxide (black) and carbon dioxide gas evolves. $CuCO_3 \xrightarrow{\Delta} CuO + CO_2 \uparrow$
6. Chemical reactions are of great importance in our daily lives
 - Chemical reactions play an important role in our daily life as in the following examples:
 1. Burning of a car fuel (gasoline) in the car engine generates power, which makes the car move.
 2. photosynthesis process, which depends mainly on the reaction of carbon dioxide with water.
 3. Manufacturing of medicines, fertilizers and artificial fibers
 - 7. The airbag is considered one of the most important safety means in cars at emergencies
 - on a sudden drop in the speed of the car, an electric spark is generated, which works on decomposition of sodium azid, forming sodium and nitrogen gas evolves. The bag gets inflated by nitrogen gas within only 40 mm second, then it gets vacuumed rapidly to ensure clear vision for the driver $2NaN_3 \xrightarrow{\text{Electric spark}} 2Na + 3N_2 \uparrow$

8. Do not extinguish sodium fires with water

- Because sodium very active metal according to C.A.S so it can replace hydrogen of water forming sodium hydroxide and hydrogen gas evolved evolves which burns with a pop sound and the reaction is accompanied by releasing of heat

**9. Magnesium can replace copper in its salts solution , but the opposite does not happen**

- Because magnesium is more active than copper as it comes before copper in chemical activity series, while copper comes after magnesium in C.A.S. So, it can't replace magnesium. $\text{Mg} + \text{CuSO}_4 \rightarrow \text{MgSO}_4 + \text{Cu} \downarrow$

10. Effervescence occurs when sodium carbonate is added to dilute HCl

- Because sodium comes before (precedes) hydrogen in C.A.S. So, it replaces hydrogen in diluted acids

11. Gold does not react with acids

- Because gold comes after hydrogen in C.A.S SO , it less active and can't replace hydrogen in diluted acids ($\text{Ag} + \text{HCl} \rightarrow \text{no reaction}$)

12. Bubbles rise when aluminum is added to hydrochloric acid , which burns with a pop sound

- Because aluminum comes before hydrogen in C.A.S so , it replaces hydrogen in diluted acids which burns with a pop sound ($2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2 \uparrow$)

13. Do not store silver nitrate is aluminum containers

- Because aluminum precedes silver in C.A.S., so it replaces silver in silver nitrate solution which leads to eroding of aluminum containers ($\text{Al} + 3\text{AgNO}_3 \rightarrow \text{Al}(\text{NO}_3)_3 + 3\text{Ag}$)

14. Oxidation and reduction are tow concurrent processes

- Because the number of gained electrons in reduction process equals the number of lost electrons in oxidation process.

15. Most metals act as reducing agents , while most nonmetals act as oxidizing agents

- Because metals tend to lose electrons during the chemical reaction, while nonmetals tend to gain electrons during the chemical reaction

16. Although the absence of oxygen in the reaction between sodium and chlorine it considered as an oxidation reaction

- Because this reaction occurs by losing and gaining electrons

17. The reaction between aluminum and hydrochloric acid is faster than the reaction between zinc and hydrochloric acid

- Because the distance between Al & H is greater than the distance between Zn & H in C.A.S (Al is more active than Zn) , as al comes before (precedes) Zn is C.A.S

18. Chemical reactions between ionic compounds are faster than between covalent compounds

- Because the reactions of ionic compounds take place between ions, while the reactions of covalent compounds take place between molecules

19. The reaction rate of HCl with iron filings is faster than its reaction with pieces of iron

- Because the surface area of iron filings exposed to reaction with acids is more than the surface area of iron piece, and as speed of chemical reaction increases by increasing the surface area.

20. The reaction rate increases with increasing concentration of reactants

- Because by increasing the number of reactant molecules, the number of possible collisions between them increases

21. The reaction rate increases with increasing temperature

- Due to increasing the number of possible collisions between reactant molecules.

22. A catalyst is used In some reactions

- To change the rate of chemical reactions.

23. It is preferable to use fragmented nickel in the hydrogenation of oils

- Because the speed of chemical reaction increases by increasing the surface area exposed to reaction.

24. Food is preserved in the refrigerator for a long time

- because the low temperature in the refrigerator slows down the speed of the chemical reactions done by bacteria which cause the rot of food.

25. A sliding rheostat is used in some electric circuits.

To control the electric current intensity in the electric circuit and consequently the electric potential difference between its ends.

26. Mendel's First Law is known as the Law of Segregation

- Due to the separation of the two genetic factors from each other during the formation of gametes

Question 6:What happens in the following:

1. Heating red mercury oxide
 - A silvery substance of mercury is formed and oxygen gas evolves.
2. Heating blue copper hydroxide
 - A black substance of copper oxide is formed and water vapour evolves
 $C(OH)_2 \rightarrow CuO + H_2O \uparrow$
3. Heating green copper carbonate
 - A black substance of copper oxide is formed and carbon dioxide gas evolves
 $CuCO_3 \rightarrow CuO + CO_2 \uparrow$
4. A glowing splint is exposed to the gas resulting from the thermal decomposition of HgO
 - It will glow more due to the produced Oxygen gas $2HgO \rightarrow 2Hg + O_2 \uparrow$
5. Put a piece of sodium in the water
 - Sodium substitutes the hydrogen of water giving sodium hydroxide and hydrogen gas evolves which burns with a pop sound $2Na + 2H_2O \rightarrow 2NaOH + H_2 \uparrow + Heat$
6. Place a piece of magnesium in a copper sulphate solution
 - it substitutes copper in copper sulphate solution forming magnesium sulphate (colorless) and copper precipitates (red ppt.) $Mg + CuSO_4 \rightarrow MgSO_4 + Cu \downarrow$
7. Add sodium carbonate to dilute hydrochloric acid
 - An effervescence occurs due to evolving of bubbles of carbon dioxide gas $Na_2CO_3 + 2HCl \rightarrow 2NaCl + H_2O + CO_2 \downarrow$
8. Adding hydrochloric acid to copper
 - No reaction occurs
9. Adding an acid to an alkali
 - Produce salt and water
10. Substituting the hydrogen of an acid with a metal

If we have a strong metal it can replace hydrogen in acid solution forming metal salt and hydrogen gas evolved which burns with pop sound
11. Replacing iron filings with a piece of iron has the same mass when reacted with dilute hydrochloric acid
 - The speed of the chemical reaction decreases.
12. Increase the surface area of the reactants relative to the rate of the chemical reaction
 - the rate of the chemical reaction will increase

- 13.** Fragmented the reactants in the chemical reaction
- The surface area exposed to reaction will increase and speed of chemical reaction increase
- 14.** Replacing dilute HCl with concentrated acid when it reacts with magnesium strip
- The rate of the chemical reaction increases.
- 15.** Reaction of oil with caustic soda
- the formation of soap in a relatively short time
- 16.** the flow of electric charge increases to double (with respect to the of the electric current intensity) when the amount of electric charge is constant
- the electric current intensity increases to double
- 17.** The amount of electricity increases to double and the time of flowing decreases to half (with respect to the intensity of the current)
- The electric current intensity increases to 4 times
- 18.** Connecting two conductors with the same electric potential
- No electric current will pass through them
- 19.** The electric current intensity passing through a conductor in an electric circuit in 10 seconds is 2 amperes
- This means that the quantity of electric charge equals 20 coulombs
- 20.** Bringing a lit matchstick close to the mouth of a test tube containing red mercury oxide while heating it.
It will be more glowing **It will be more glowing.**
- 21.** Absence or weakness of attractive forces in the atom between the nucleus and valence electrons.
- - The electrons in the outer level will leave the atom and become free.
- 22.** Crossing a pure yellow - seeded pea plant (YY) with a green - seeded pea plant (yy).
- It will produce a 100% hybrid yellow seed in first generation.

Question 7:Compare between the following:**1. Ionic compounds and covalent compounds**

Ionic compounds	covalent compounds
* They are fast reacting compounds because they break up into ions.	* They are slow reacting compounds because they don't break up into ions.
* The reaction takes place between ions	* The reaction takes place between molecules

2. Positive catalyst and negative catalyst

P.O.C	Positive catalyst	negative catalyst
Definition	It is a chemical substance which increase rate of the chemical reaction	It is a chemical substance which decreases rate of the chemical reaction

3. The ammeter and the voltmeter

P.O.C	Ammeter	Voltmeter
1) Its symbol:		
2) Used for measuring:	The current intensity (1) in an electric circuit	a. The electromotive force (e.m.f) of an electric source. b. The potential difference (v) between two points in an electric circuit.
3) Type of connection in the electrical circuit:	Series connection.	parallel connection.
4) Measuring unit:	Ampere.	Volt.

4. The electric current intensity and the electromotive force :

P.O.C	electric current intensity	electromotive force (e.m.f)
1) Definition	It is the quantity of electricity in coulomb or the electric charges flowing through a cross section of the conductor in one second	It is the potential difference between the two poles of battery when the electric of the conductor when circuit is open (no current passes through the circuit).
2) It is measured when	A circuit is closed.	A circuit is opened.

5. Volt and coulomb, in terms of definition and the physical quantity they represent.

P.O.C	volt	coloumb
1) Definition	It is the potential difference across two terminals of a conductor on doing a work of one joule to transfer a quantity of charge of one coulomb.	It is the quantity of charge transferred by a constant current intensity of one ampere at the time of one second.
2) physical quantity	Potential difference.	A quantity of charge.

6. Ohmmeter and sliding rheostat

P.O.C	ohmmeter	sliding rheostat
importance	The apparatus used in measuring the electrical resistance.	It is used in controlling the electrical resistance. Or to control the electric current intensity flowing through the circuit and the potential difference in the different parts of the circuit.

7. Electrochemical cells and generators

P.O.C	Electrochemical cells	generators
definition	They are the cells in which the chemical energy is converted into electrical energy.	They are the devices in which the mechanical (kinetic) energy is converted into electrical energy.
type of the produced electric current	Direct electric current	alternating electric current
examples	Dry cells. Batteries	Dynamo (electric generator).

8. Direct current and alternating current

P.O.C	Direct current	alternating current
definition	It is an electric current which has a constant intensity and flows in one direction in the electric circuit.	It is an electric current which has a variable intensity and flows in two opposite directions in the electric circuit.
source	Electrochemical cells such as dry cells and batteries	Electric generators such as dynamos.

9. Dominant & recessive traits

Points of comparison	Dominant trait	Recessive trait
Definition	It is the trait that appears when aggregation of two similar factors (two genes) of the dominant trait, or one factor (gene) of the dominant trait with a factor (gene) of the recessive trait.	It is the trait that appears only when aggregation of two similar factors (two genes) of the recessive trait.
Example	The trait of yellow colour seeds of peas	The trait of green colour seeds of peas

The ratio of its appearance on mating an individual carries a pure dominant trait with another carries a recessive trait	It appears at a percentage of 100% in the first generation and at a ratio of 75% in the second generation.	It disappears in the first generation and appears at a percentage of 25% in the second generation.
Purity of the trait	It is pure or impure	It is always pure

10. Pure & hybrid individuals

Pure individual	Hybrid individual
It is the individual that carries a similar pair of genes (factors) either dominant trait or recessive trait, so the dominant trait (pure) or the recessive trait appears on the individual	It is the individual that carries a different pair of genes (factors), one is dominant and the other is recessive, so the dominant trait (impure) appears on the individual.

11. Simple goiter and exophthalmos

1-Simple goiter	2-Exophthalmic goiter
Reason	
Decrease in the secretion of the thyroxine hormone due to the lack of iodine from food as it enters in the hormone's structure	Increase in the secretion of the thyroxine hormone in large amounts
Symptoms of the disease	
Enlargement of thyroid gland and the neck	Enlargement of thyroid gland accompanied By loss of weight, tension and exophthalmoses

12. testis and ovary (in terms of hormones and its function)

Points of comparison	Testes	Ovaries
The produced hormones:	Testosterone	Estrogen and progesterone
The function	It appears the male secondary sex characters.	- Estrogen appears the female secondary sex characters. - Progesterone promotes the growth of endometrium

13. Dwarfism - Gigantism

1-Dwarfism	2-Gigantism
Reason	
Decrease in the secretion of the growth hormone at the childhood	Increase in the secretion of the growth hormone at the childhood
Feature of disorder	
The body stops growing, so the person becomes a dwarf	A continuous growth in the limbs' bones, so the person becomes a giant

14. Glucagon and calcitonin

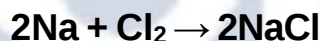
P.O.C	Glucagon	calcitonin
gland	Pancreas gland.	Thyroid gland.
importance	It raises the level of glucose sugar in the blood.	It controls the level of calcium in blood.

15. Compare the physical and genetic changes resulting from a person's exposure to a small amount of radiation over a long period (in terms of their effects).

- Physical effects : They are changes that appear on a living organism, as a result of exposure to radiation like skin cancer**
- Genetic effects :- They are changes in the sex chromosomes composition which result in abnormal birth.**

Question 8:Variant questions:

1. what is the importance of the chemical reactions ?
 - Chemical reactions play an important role in our daily life as in the following examples
 1. Burning of a car fuel (gasoline) in the car engine generates power, which makes the car move
 2. Photosynthesis process, which depends mainly on the reaction of carbon dioxide with water
 3. Manufacturing of medicines, fertilizers and artificial fibers
2. according to your study mention the names of the chemical compounds that give oxygen gas when thermally decomposed
 - Mercuric oxide
 - Sodium nitrate
3. In the following reaction, identify each of the..... and give the reasons?



- 1- The oxidizing agent is (Chlorine Cl) because (it gains an electron during the chemical reaction and changes into a negative chloride ion.)
- 2- The reducing factor is (sodium Na) because (it loses an electron during the chemical reaction and changes into a positive sodium ion.)
- 3- Sodium has been (oxidized) because (it loses an electron and changes into a positive sodium ion $2\text{Na} \rightarrow 2\text{Na}^+ + 2e^-$)
- 4- Chlorine has been (Reduced) because (it gains an electron (which is lost by sodium) and changes into a negative chloride ion $\text{Cl}_2 + 2e^- \rightarrow 2\text{Cl}^-$)

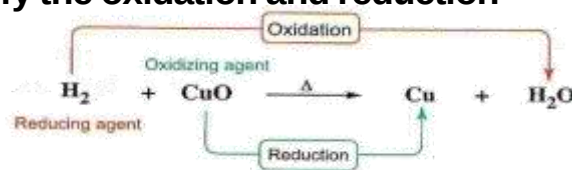
4. In the following reaction:

- Using arrows on the chemical equation, identify the oxidation and reduction

processes.
$$H_2 + CuO \xrightarrow{\Delta} Cu + H_2O$$

- The oxidizing agent is: (copper oxide CuO)

- The reducing agent is: (Hydrogen H_2)



3. The opposite figure shows the decomposition of sulfur trioxide to sulfur dioxide and oxygen according to the following equation:



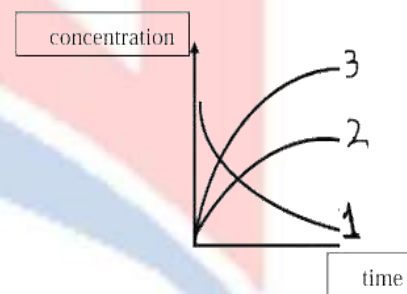
- After the reaction ends, the SO_3 Concentration is (zero) %

- State what each graphic line represents of the elements and compounds in the previous equation ?

The graph line (1) represents (SO_3)

The graph line (2) represents (O_2)

The graph line (3) represents (SO_2)

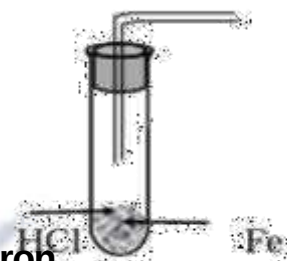


4. In the opposite reaction

- What happens when a piece of iron is replaced with iron filings has the same mass?

- the speed of chemical reaction will increase

- The factor affecting the speed of the chemical reaction when using iron filing instead of a piece of iron is (the surface area of reactants which exposed to reaction)



- Illustrate the reaction with a balanced chemical equation ?



- 5. Mention the use or importance of each of the following:**
- 1- Manganese dioxide

A positive catalyst that increases the speed of decomposition of hydrogen peroxide.

- 2- Enzymes

They act as catalysts that increase the speed of biological reactions.

- 3- Ceramic cells in the catalytic converter

It helps in the treatment of harmful gases emitted from the car engine.

- 4- Neutralization reactions

. It is a reaction between an acid and an alkali to form salt and water.

- 6. What are the factors affecting the rate of a chemical reaction?**
- 1- The nature of the reactants

- a. The type of bonding in reactants.

- b. The surface area of reactants exposed to reaction

- 2- The concentration of the reactants

- 3- The temperature of the reaction

- 4- Catalysts

- 7. In light of what you have studied, identify the role of each of the following scientists:**
- 1- Watson and Crick

They make a model of DNA molecule.

- 2- Beadle and Tatum

They discovered the means of how the genes control the appearance of hereditary traits.

- 3- Mendel

He is the founder of heredity.

- 4- Johansen

used the term gene instead of the hereditary factor and also introduced:

- The term "genotype" for the gene structure and "phenotype" for the hereditary trait

8. In the school laboratory, there are two test tubes: one contains diluted hydrochloric acid, and the other contains concentrated hydrochloric acid. How can you distinguish between them using two equal masses of magnesium?

The rate of the reaction of magnesium with conc. hydrochloric acid is faster than that in case of dil. hydrochloric acid as The speed of chemical reaction increases (take less time) by increasing the concentration of the reactants.



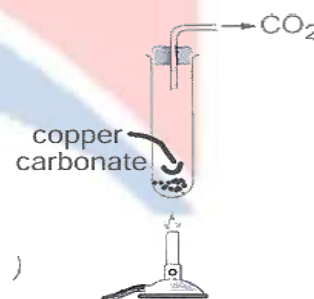
9. In the adjacent diagram, copper carbonate (green in color) is heated.

- Write the chemical equation representing the reaction:



- How can the evolved gas be detected?

- By passing CO_2 into clear limewater for a short time, it becomes turbid



10. How can you obtain hydrogen gas using two different methods from your studies? Write the chemical equations.

First method: the simple substitution reaction between sodium and water. chemical equation : $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2 \uparrow + \text{Heat}$

second method: the simple substitution reaction between zinc and hydrochloric acid.

chemical equation : $\text{Zn} + 2\text{HCl} \xrightarrow{\text{dil}} \text{ZnCl}_2 + \text{H}_2 \uparrow$

11. If the work done to transfer an electric charge of 3 coulombs between two points in half minute is equal to 12 joules, calculate:

- a- The potential difference between the two points.

$$-V = \frac{\text{work}}{\text{quantity of charge}} = \frac{12}{3} = 4 \text{ volt}$$

- b- The electric current intensity.

$$-I = \frac{\text{quantity of charge}}{\text{time}} = \frac{3}{30} = 0.1 \text{ ampere}$$

- 12.** Calculate the electric current intensity resulting from the passage of an amount of electricity is 6000 coulombs through a cross section of a conductor in 5 minutes.

$$I = \frac{\text{Quantity of charge}}{\text{time}} = \frac{6000}{5 \times 60} = 20 \text{ ampere}$$

- 13.** Calculate the time of passage of an amount of electric charge amounting to 25 coulombs if you know that the electric current intensity is 10 amperes.

$$\text{Time} = \frac{\text{quantity of charge}}{\text{Electric current in intensity}} = \frac{25}{10} = 2.5 \text{ sec}$$

- 14.** If the potential difference between the two ends of an electric source is 240 volts and the electric current intensity in it is 8 ampere, calculate the electric current intensity if it is connected to an electric source with a potential difference of 220 volt.

$$R = V / I = 240 / 8 = 30 \text{ ohm}$$

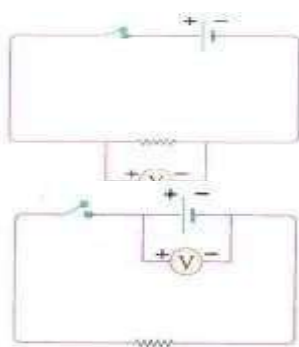
$$I = V / R = 220 / 30 = 7.33 \text{ ampere}$$

- 15.** Calculate the work done to transference an electric charge of 5 coulombs through a conductor if the potential difference between the two ends of the conductor is 3 volts.
- $$w = \text{quantity of charge} \times \text{Potential difference} = 3 \times 5 = 15 \text{ Joule}$$

- 16.** If the potential difference between the two ends of an electric source is 100 volts, calculate the amount of electricity transferred when this electric source does work of 200 joules.

$$Q = \frac{\text{work}}{\text{potential difference}} = \frac{200}{100} = 2 \text{ coulomb}$$

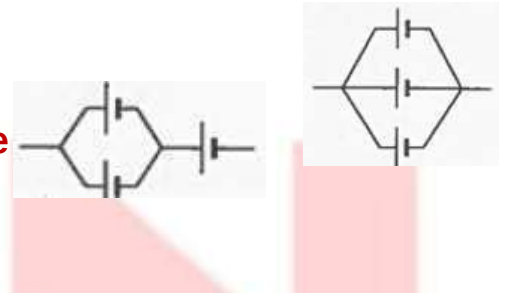
- 17.** Explain with a diagram how to connect a voltmeter to measure the potential difference between the two terminals of an electric lamp and between the two terminals of the electric source, and mentioning the function of the voltmeter in each circuit.



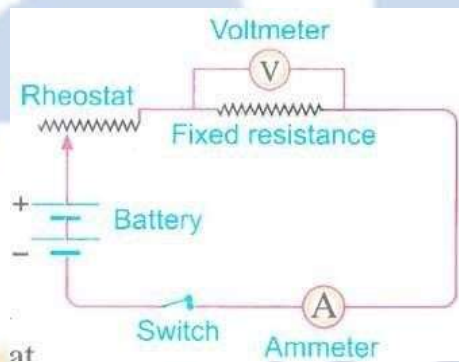
- a) the potential difference between the two terminals of an electric lamp. (closed circuit, It is connected in parallel between the two terminals of a lamp to measure the potential difference.)
- b) the potential difference between the two terminals of the electric source. (Open circuit, It is connected in parallel between the poles of the dry cell or battery to measure the electromotive force of the battery.)

18. You have three identical electric cell, each has electromotive force of 1.5 volts. Explain with a drawing how they can be connected to obtain an electromotive force (1.5 volts - 3 volts - 4.5 volts)

- All the cells are connected in parallel**
- Two cells are connected in parallel and the both are connected in series with the third**
- All the cells are connected in series**

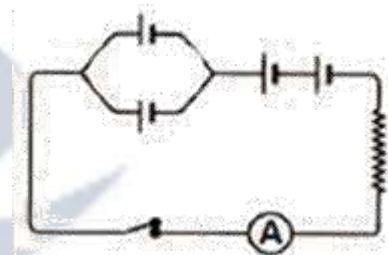


19. a- Illustrate with a diagram the electrical circuit used to practically implement Ohm's law, and write the mathematical formula for the law.



$$R = \frac{V}{I}$$

b- calculate the electric current intensity in the following circuit, if the e.m.f of each cell is equal 3 volt and the resistance is equal 30 Ohm.

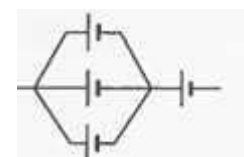
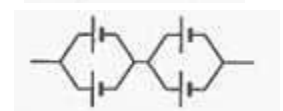
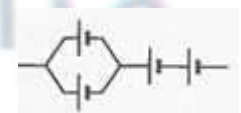
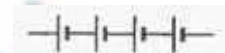


$$I = \frac{e.m.f}{R} = \frac{3+3+3}{30} = 0.3 \text{ Amp}$$

20. You have four electric poles of 2.5 volts each, explain how you can get batteries for them:

- 10V
- 7.5V
- 5V in two ways

- All the cells are connected in series**
- Two cells are connected in parallel and the both are connected in series with the third and the fourth.**
- The first way Two cells are connected in parallel and the other two also are connected in parallel then the two groups are connected in series.**
- The second way:- Three cells are connected in parallel and they are connected in series with the other one**



21. If the switch are close:

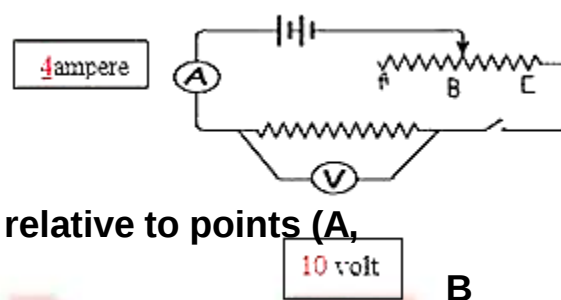
1- Find the value of the fixed resistance.

$$R = \frac{V}{I} = \frac{10}{4} = 2.5 \text{ ohm}$$

2- Explain where the rheostat should be placed relative to points (A,

, and C) to obtain the greatest electric current intensity.

○ **Point A**

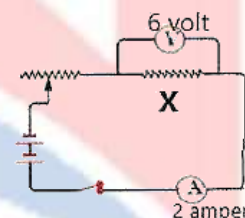


22. Study the opposite figure and then, answer the following:

1) Type of resistance(X)(fixed resistance).....

2) Value of resistance = $r = \frac{6}{2} = 3 \text{Ohm}$

3) The amount of electricity passing through resistance (X) in half a minute =
..... $Q = 2 \times 30 = 60 \text{Coulombs.}$



23. Calculate the e.m.f. of each battery :

1)2.4V	2)4.5V	3)3V	4)4.5V

24. A conductor has a resistance of 44 ohms and the amount of electricity flowing in 1 second is 5 coulombs. Calculate its potential difference.

$$I = \frac{Q}{t} = \frac{5}{1} = 5 \text{ ampere}$$

$$V = I \times R = 44 \times 5 = 220 \text{ volt}$$

25. If the work done required to transfer 40 coulombs is equal 20 joules through a wire with a resistance equal 10-ohm, calculate the electric current flowing through the wire?

$$V = \frac{W}{q} = \frac{20}{40} = 0.5 \text{ volt}$$

$$I = \frac{V}{R} = \frac{0.5}{10} = 0.05 \text{ amp}$$

- 26.** A recorder operates at a voltage of 9 volts. It is desired to operate it using several batteries, each with an electromotive force of 1.5 volts. What is the minimum number of batteries that can be used?

$$\text{Number of cells} = 9 / 1.5 = 6 \text{ cells}$$

- 6 cells are connected series

- 27.** A conductor with a resistance of 50 ohms and the amount of difference electricity flowing in it is 40 Coulombs and the potential between the terminals of 250 volts. Calculate the time required for the flow of the amount of electricity.

$$I = \frac{V}{R} = \frac{250}{50} = 5 \text{ Amp}$$

$$t = d / v = 40 / 5 = 8 \text{ sec}$$

- 28.** If a 2- ampere electric current passes through a wire with a voltage difference between its two ends of 220 volts, calculate the impedance encountered by the current while passing through the wire.

$$R = \frac{V}{I} = \frac{220}{2} = 110 \text{ ohm}$$

- 29.** Two metal wires of the same material resistance of the second wire three times the first and the length of the first wire was 2 meters and its resistance was 1 ohm, so calculate the resistance and length of the second wire.

First wire Second wire

$$R_2 = 3 \times R_1$$

$$R_2 = 3 \times 1 = 3 \text{ ohm}$$

$$L_2 = 3 \times 2 = 6 \text{ meter}$$

- 30.** From the opposite figure:

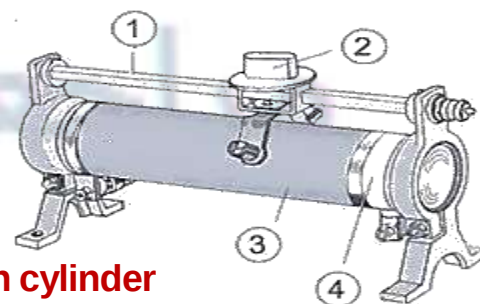
(a) What is the name of this instrument?

(Variable resistance (sliding rheostat))

(b) Label the instrument.

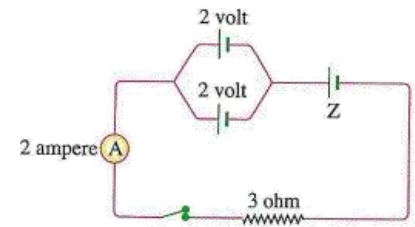
1- copper bar , 2-slider , 3- Metallic wire coil , 4) Porcelain cylinder

(c) How can it be used as a fixed resistance? (if we make the length of wire constant)



31. By using the given figure:

Calculate the electromotive force (e.m.f.) (E) of the cell knowing that the ammeter reading is (2 amperes) and the resistance is (3 ohms).



$$V = I \times R = 2 \times 3 = 6 \text{ volt}$$

$$\text{e.m.f battery} = E_{\text{parallel}} + E_2$$

$$E_2 = \text{e.m.f battery} - E_{\text{parallel}}$$

$$E_2 = 6 - 2$$

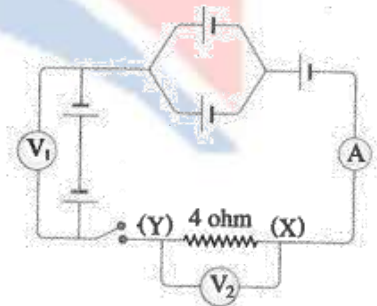
$$E_2 = 4 \text{ volt}$$

32. In the opposite figure:

Five similar electric cells, e.m.f. for each 3 volts.

1. What is the reading of the voltmeter? $V_1 = 6 \text{ volt}$

$V_2 = \text{zero}$



2. When the key (K) is closed, calculate:

The work done to transfer quantity of charges between the two points (X and Y) through two minutes

$$I = \frac{V}{R} = \frac{3+3+3+3}{4} = \frac{12}{4} = 3 \text{ amp}$$

$$Q = I \times t = 3 \times 120 = 360 \text{ coul}$$

$$W = Q \times V = 360 \times 12 = 4320 \text{ J}$$

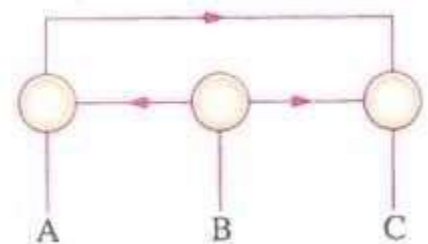
33. Study the opposite two figure, then answer the questions below each figure: You have three electric conductor A, B, C

a. Arrange these conductors in descending order according to the electric potential of each of them.

$$- B > A > C$$

b. Mention the name of the apparatus used in decreasing electric potential

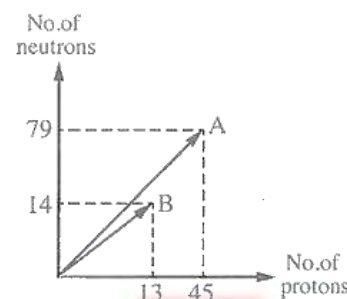
- Sliding rheostat



34. In the opposite figure,

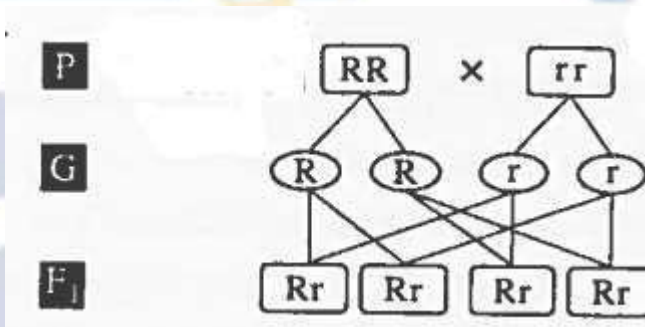
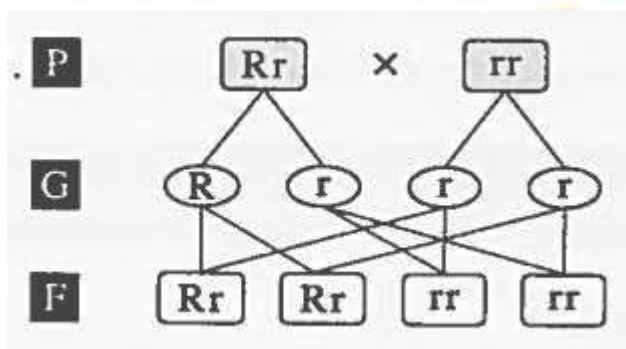
the element it is radioactive, because

A) number of neutrons is more than the number required for its stability, which leads to the presence of an excess energy that releases in the form of invisible radiation



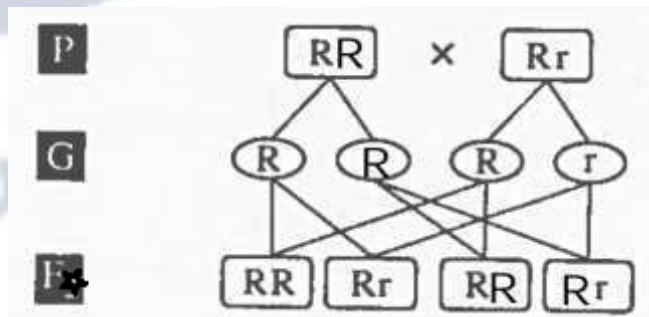
35. Suha has two long-haired cats: one is purebred for the long hair trait, and the other is heterozygous. (Long hair is a dominant trait.)

- How can you distinguish between them by mating each with a short-haired cat? According to the genetics principle the impure long hair trait will produce 50% of its generation for the long hair trait and 50% for the short hair trait, while the pure long hair trait will produce 100% for the long hair trait only.

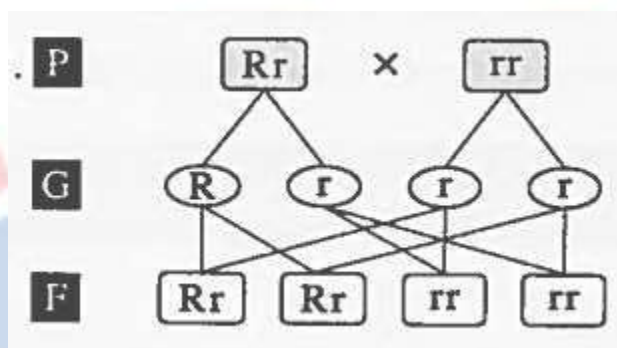


36. How many pea plants with red flowers and white flowers result from crossing a pea plant with genotype (RR) with another plant of genotype (Rr), if the total number of resulting plants is 300?

300 pea plants with red flowers and ZERO with white flowers.



- 37.** When two pea plants are crossed, one with red flowers and the other with white flowers, the offspring appeared with 50% white flowers. Explain, based on genetics, the genotype of both the parents and the resulting offspring, knowing that the dominant gene is represented by R and the recessive gene by r.



- 38.** From the two following figures, answer the following questions:

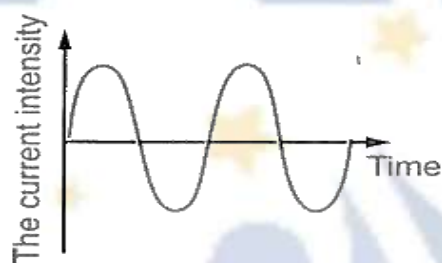


Fig. (1)

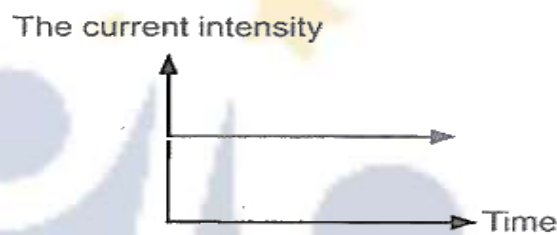


Fig. (2)

- (a) What is the type of current in each figure?

- Fig. (1): Alternating current

- Fig. (2): Direct current

- (b) How can you obtain each of them?

- Fig. (1): It is produced from electric generators (as Dynamos).

Fig. (2): It is produced from electrochemical cells such as batteries and dry cells

- (c) Mention the use of each current.

- Fig. (1): It is used in lighting houses and in operating electric appliances

Fig. (2): It is used in electroplating processes and in some electric appliances.

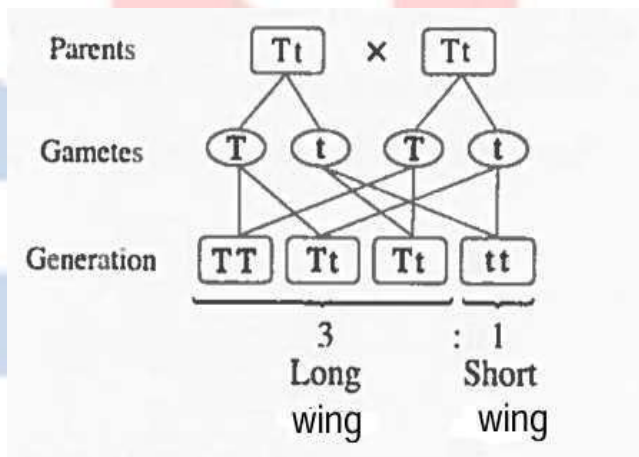
- (d) Which of the two graphs expresses the current that is able to transmit for long distances?

Fig. (1)

39. In the beet plant, the swollen roots factor M is predominant on the weak roots factor, and the red color factor R is predominant on the white color factor Find the genetic and phenotypic structures of the parents if the result is 3 individuals with red.

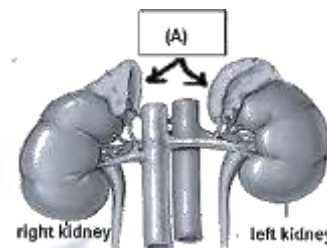
Parent 1 and 2 : genetic structure MmRr (heterozygous for both traits), phenotypic structure beet plant with the swollen roots and red color.

40. Explained genetically, the hybridization in Drosophila occurs between a male and a female, each with long wings, resulting in 27 long-winged individuals and 9 short-winged individuals. If you know that the symbol for long wings is (T) and short wings is (t).



41. From the opposite figure, mention:

- 1- The name of the gland? **Adrenal gland.**
- 2- The name of the hormone which is secreted from the gland?
Adrenaline hormone
- 3- The function of the hormone secreted by the gland?
It stimulates the body's organs to respond to emergencies.
- 4- What is the name of the gland that controls the secretion of gland (A)?
The pituitary gland.



42. What is meant by each of the following

- 1- The rate of chemical reaction :- **It is the change in the concentration of the reactants and results at a unit time.**
- 2- The catalytic converter :- **It is a metallic can that exists in most modern cars to treat the harmful gases emitted from the engine.**
- 3- Enzymes :- **They are chemical substances produced by the body of living organisms, acting as catalysts that increase the speed of the biological reactions.**

حمل الآن

مجاناً وحصرياً

المراجعة رقم (3)

الترم الثاني



Unit 1 revision

1) Choose the correct answer:-

- 1- On heating copper hydroxide we obtain :
(Copper carbonate and water – copper oxide and water – copper and hydrogen – copper oxide and hydrogen)
- 2- In thermal decomposition reactions, the compound is decomposed into:
(Its simple components – its primary elements – other compounds – all the previous)
- 3- When dilute hydrochloric acid is added to calcium carbonate..... gas is evolved.
a. CO₂ b) H₂ c) O₂ d) CO
- 4- A process that involves the splitting of compounds into simpler compounds by the effect of heat is called.....
a. simple substitution b) thermal decomposition
c) electrolysis d) direct combination
- 5- The blue colour of copper sulphate disappears and is formed by heating.
a. black ppt b) red colour c) yellow ppt d) black colour
- 6- The following elements can replace hydrogen in dilute acids except..... element.
a. Magnesium b) zinc c) copper d) sodium
- 7- The oxidizing agent is the compound which..... during the chemical reaction.
a. loses hydrogen b) gains oxygen c) loses oxygen
- 8- The percentage of hydrogen increases during reactions.
a) neutralization b) oxidation c) reduction d) substitution
- 9- In the reaction between sodium and chlorine to form sodium chloride, the oxidizing agent is.....
a) sodium b) chlorine c) sodium chloride d) both sodium and chlorine

2) Write the scientific term :

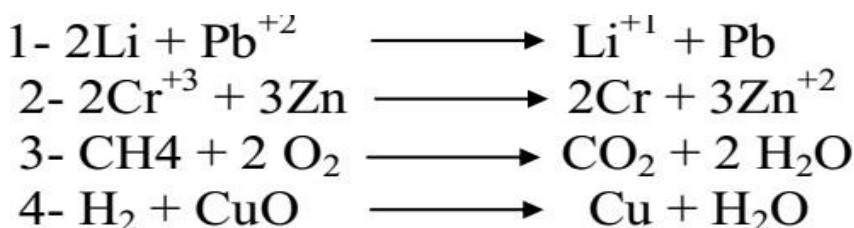
- 1- The breaking up of the molecules of the reactants and the forming of new molecules.
- 2- A chemical process where the atom gains one or more electron.
- 3- It is the substance which loses an electron or more during a chemical reaction.
- 4- A reaction where an element substitutes another one.
- 5- A process of splitting compounds into simpler compounds by the effect of heat.
- 6- The arrangement of metallic elements according to decreasing chemical activity.
- 7- A process in which an element displaces another element in one of its salt solution.
- 8- It is the double exchange between the radicals of two compounds to give two other new compounds.
- 9- A reaction between acid and alkali to give salt and water.
- 10- A chemical substance which helps to increase the speed of the reaction
- 11- The chemical process which leads to the increase of oxygen or decrease of hydrogen
- 12- Two processes take place at the same time during the chemical reaction
- 13- A substance which gains one or more electrons during a chemical reaction.
- 14- The chemical process in which the atom of the substance gains one electron or more during the chemical reaction.

3) Write the balanced chemical equations for the following:

- 1- The reaction between hydrochloric acid and sodium hydroxide.
.....
- 2- Adding silver nitrate solution to sodium chloride solution.
.....
- 3- The effect of heat on red mercury oxide.
.....
- 4- The reaction of zinc with diluted hydrochloric acid.
.....
- 5- The effect of heat on sodium nitrates.
.....
- 6- The reaction of water with sodium.
.....
- 7- The reaction between hydrochloric acid and calcium hydroxide.
.....
- 8- Insertion of a magnesium ribbon in a solution of copper sulphate.
.....
- 9- The reaction of Aluminium with diluted hydrochloric acid.
.....
- 10- Reduction of hot copper oxide by hydrogen.
.....

**4) Compare between:**

- 1- Heating of metal oxide and metal hydroxide.
.....
- 2- Oxidation and reduction.
.....
- 3- Simple substitution and double substitution reactions.
.....

5) Identify the process of oxidization, reduction, oxidizing factor and reducing factor in each of the following reactions:

6) Complete the following statements:

- 1- Oxidization is a chemical process where the atom an electron or more.
- 2-.....factor is the substance which gains one electron or more during a reaction.
- 3- Duringreactions, the compound breaks up by heat into its simple components.
- 4is the reaction between an acid and an alkali to form salt and water.
- 5is the substance which gives oxygen and takes away hydrogen.
- 6- At the beginning of the reaction, the concentration of reactants is.....%
- 7- The change in the concentration of reactants and resultants in a time unit is
- 8- The increase in concentration of reactants makes the chemical reaction.....
- 9- The reaction of contributing compounds is
- 10- Sodium chloride powder reacts than a cube of sodium chloride
- 11- A substance which increases the chemical reaction without changing in the reaction.....
- 12- $\text{NaCl} + \text{AgNO}_3 \longrightarrow \dots\dots\dots + \dots\dots\dots$
- 13- $\text{Cu}(\text{OH})_2 \longrightarrow \dots\dots\dots + \dots\dots\dots$
- 14- $2\text{NaNO}_3 \longrightarrow \dots\dots\dots + \dots\dots\dots$
- 15- $2\text{HgO} \longrightarrow \dots\dots\dots + \dots\dots\dots$
- 16- The size of the solute molecules in the real solution is.....than that in the colloidal solution.
- 17- In the..... solution, the solute molecules can be distinguished by the naked eye.
- 18- It is possible to dissolve more solute in the..... solution.
- 19- In the stomach, there is.....that help in the digestion of proteins
- 20- Solution can be classified in terms of homogeny into and
- 21- The break up of existed bonds in the molecules of reactants and the forming of new bonds is called.....
- 22- The speed of chemical reactionsdue to the increase of temperature.
- 24- Oxidation and reduction are two processes.
- 25- The components of the solution can be separated by refining or filtration.
- 26- Most metal sulphates undergo thermal decomposition to giveand.....
- 27- The chemical activity series is the arrangement of metallic elements in a..... order according to their
- 28- Chemical reaction is the process in which bonds in reactants areand bonds in are formed.
- 29- Oxidation and reduction are two processes.
- 30- The substance that gives oxygen and removes hydrogen is called.....
- 31- In the following reaction: ($2\text{Mg} + \text{CO}_2 \xrightarrow{\Delta} 2\text{MgO} + \text{C}$) the oxidizing agent is

7) Put a (✓) or (✗) in front of the following statements and correct the wrongwords:

- 1- The increase in the concentration of the reactants increases the number of collisions between molecules so that the speed of reaction decreases. ()
- 2- Most metal carbonates decompose by heating into metal oxide and carbon dioxide. ()
- 3- The reactions of ionic compounds are slower than coordinate compounds. ()
- 6- Metallic elements are arranged in an ascending order according to their chemical activity in the C.A.S. ()
- 7- No reaction takes place between copper and zinc sulphate. ()
- 8- Anhydrous copper sulphate decomposes by heat to give copper oxide and sulphur dioxide. ()
- 9- Reduction means gaining of hydrogen . ()

8) Give reasons :

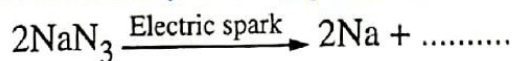
- 1- The fridge is used to preserve food.
.....
- 2- Using molecule nickel in hydrating oil instead of pieces of nickel.
.....
- 3- Magnesium can replace copper in its salt solutions, while opposite cannot happen.
.....
- 4- Copper does not react with diluted hydrochloric acid.
.....
- 5- When a magnesium strip burns in air a white powder is formed.
.....

9) Mention the name of the gas in each of the following:

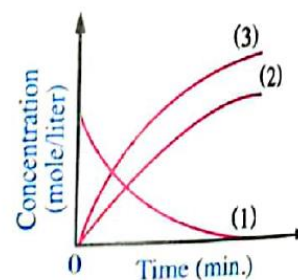
- 1) Turns lime water milky.....
- 2) Is obtained by the reaction between dilute hydrochloric acid and magnesium metal.....
- 3) Increase the glowing of lighted splint.....

Is produced from the thermal decomposition of sodium nitrate.....

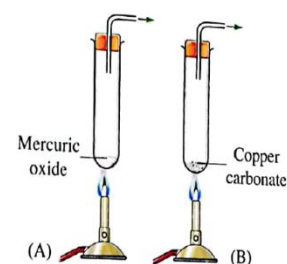
The opposite graph represents the rate of rapid decomposition of the substance of sodium azide (which is present inside the air bag) :



1. Complete the equation.
2. From the graph, write the name of the compound or the element which is indicated by each number.

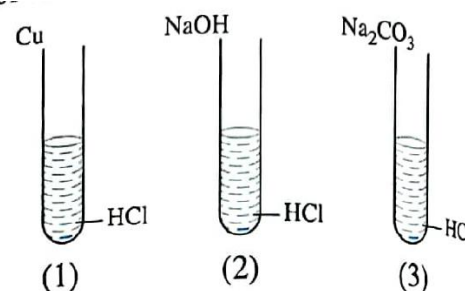


Compare between the colour in test tube A and B



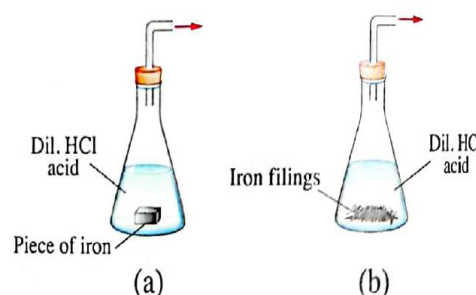
Study the opposite figure, then answer :

- a. In which tube the gas evolved.
- b. Mention the type of the reaction in tube 2.

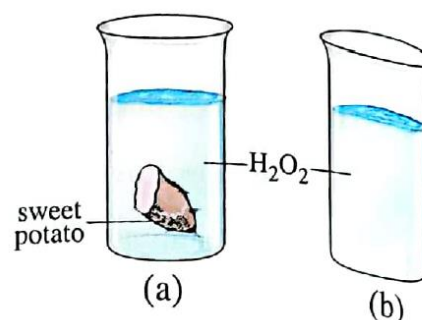


From the opposite figures, Answer :

1. Which reaction is faster (a) or (b).
2. What happens if iron is replaced by copper ?



The two opposite figures illustrate two beakers which contain equal amount of hydrogen peroxide, one beaker contains a piece of sweet potato :
What is the gas produced from Hydrogen peroxide dissociation ?



Unit 2 revision

1) Choose the correct answer:-

1-Direct current can be produced form:

(Electrochemical cells – electric generators – electric power stations)

2-is the measuring unit of the electric charges (coulomb – ampere – volt)

3- The.....is used to measure the electromotive force of a battery.

(Voltmeter – Ammeter – Rheostat)

5- The sliding Rheostat is used to change andin the electric circuit.

(The current intensity and potential difference – the resistance and potential difference – current intensity and resistance).

6- The Ammeter is used to measure in the electric circuit.

(The potential difference – the current intensity – the resistance)

7- The unit of measuring the electric resistance is (Ampere – Volt – Ohm)

8- The unit of measuring the current intensity is.....(Ampere – Volt – Ohm)

9- The direct current is used in (Lighting – electric paint – operating refrigerators)

11- One of the properties of the alternating current is

(Has constant value – change direction – used in electric paint)

2) Writ the scientific term :

1- The flow of electric charges in a conductor. ()

2- The electric current of fixed intensity and direction ()

3- The obstruction the electric current during its flow in the conductor. ()

4- The flow of electric negative charges in a conducting element (metal wire). ()

5- The amount of electric charges that flow through a conductor in a certain time. ()

6- The flow of electric charges in a conductor.

7- The resistance of a conductor that allows the passing of an electric current of 1 Ampere through it when the potential difference between its two ends is 1 Volt.

8- The intensity of the electric current flowing in an electric circuit when an electric charge of 1 Coulomb passes within the conductor's cross section in 1 second.

9- The device used to measure the intensity of the electric current passing in a conductor.

10- The electric state of a conductor that shows the transference of electricity from and to it.

11- The measurement unit of the electromotive force of the electric cell.

12- The measuring unit of the absorbed radiation.

13- The natural conversion of the atoms of some elements in nature as an attempt to reach a more stable composition.

14- The flow of electric negative charges in a conducting material (metal wire).

15- A device used to measure the electric current intensity.

16- The work done to transfer unit of electric charge between two ends of a conductor.

- 17- The opposition to the flow of electric current in the conductor.
- 18- The potential difference across the two poles of the battery when the circuit is opened -19
- 19- The electric current of constant intensity and direction.
- 20- A type of connection of electric cells used to obtain high e.m.f.
- 21- The process of conversion of atoms of some elements to reach more stability.

3) Problems:

- 1- Calculate the potential difference of the two ends of a vacuum cleaner whose resistance is 22 Ohm and the current intensity passing through it is 10 Ampere.
- 2- You have three similar cells, the electromotive force of each is 1.5 volt, explain by using a diagram how you can connect them to obtain an e.m.f of:
 - 1) 1.5 volts 2) 3 volts 3) 4.5 volts
- 3- You have 4 similar electric cells. The potential difference of each one is 1.5 Volt. Illustrate by drawing how you connect them to get batteries of emf of:
 - A- 6 Volt. B- 4.5 Volt. C- 3 Volt in two ways. D- 1.5 Volt.
- 4- You have four electric cells each of e.m.f 1.2 volt. Show by drawing the method of connecting them to obtain each of the following:
 - A) 1.2 volt B) 4.8 volt c) 2.4 volt
- 5- If the potential difference between the terminals of a conductor is 6 volts, and the electric current of intensity 0.5 ampere is passed through it. Calculate the intensity of the electric current passing through this conductor if it is connected with a voltage source of 12 volts.
- 6- Calculate the quantity of electricity that pass through a conductor of resistance 1000 ohms for 30 minutes, given the potential difference between its two terminals is 220 volts.
- 7- Calculate the potential difference between two points if the work done to transfer a charge of 600 coulomb is 6600 joule.

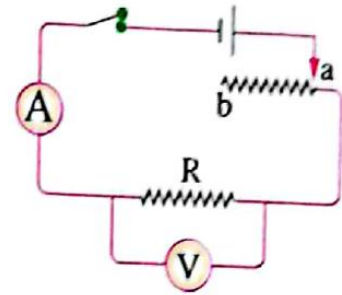
4) Complete the following statements:

- 1 is measured by using the Voltmeter and has a measuring unit known as.....
- 2- The.....is used to measure the electromotive force of a battery in units known as.....
- 3- While connecting charged conductors, the electric current passes from the conductor have..... potential to the conductor havepotential.
- 4 - The electric current generated from a dynamo is due to converting energy to energy.
- 5- Cell produce current while the dynamo produces current.
- 6- There are two types of electric current.....and.....
- 7- The current intensity due to the flow of 2700 coulomb in 300 second through a cross-section of a conductor equals
- 8- In the electric circuits, the ammeter is connected in..... , while the voltmeter is
- 9- $\text{Volt} = \frac{\text{joule}}{\text{.....} \times \text{second}}$
- 10- There are two types of electric current which are and
- 11- The.....electric current can be transported only to short distance.
- 12- There are two methods of connecting electric cells which are and.....
- 13-,..... and cesium are natural radioactive elements.
- 14- Nuclear energy is used in medicine in and of some diseases.

5) Give reasons:

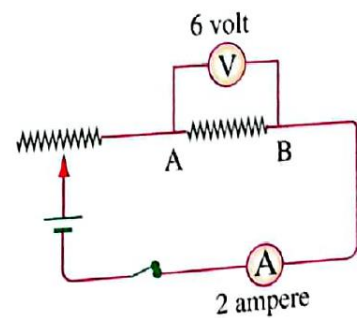
- 1- It is better to use the alternating current rather than the direct current.
.....
- 2- The voltmeter is connected to both poles of the battery in the electric circuit
.....
- 3-The areas chosen for storing radioactive wastes should be stable.
.....
- 4- Radiation has genetic effects.
.....
- 5- After the Chernobyl accident, radioactive isotopes were found in the food products.
.....
- 6- Magnesium can replace copper in its salt solutions, while opposite cannot happen.
.....
- 7- Some elements are called radioactive elements.
.....
- 8- The voltmeter is connected across the two poles of a battery.
.....
- 9- Rheostat is used in some electric circuits.
.....
- 10- Voltmeter is connected between the two ends of a conductor.
.....
- 11- It is better to use alternating current rather than direct current.

1. In the opposite closed electric circuit, when the slider of rheostat move from (a) to (b) the reading of voltmeter

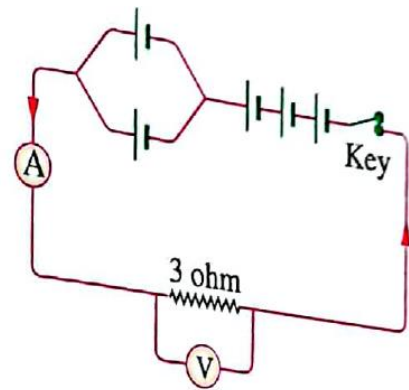


From the opposite circuit, complete the following :

1. The type of resistance A B is
2. The value of the resistance A B = ohms.



In the following electric circuit in the figure :
If the potential difference between resistance ends equals the total (e.m.f.) of all cells,
if the (e.m.f.) of each cell equals 1.5 volt
and the resistance 3 ohms. Find the electric current intensity passes in Ammeter.



Units 3&4 revision

1) Choose the correct answer:-

- 1- The.....hormone releases the needed energy from the food stuffs:
a) Growth b) estrogen c) thyroxin
- 2- The.....hormone releases the needed energy from the food stuffs
a) growth b) estrogen c) thyroxin
- 3- The hormone responsible for producing secondary sexual male characteristics is the hormone.
a) Progesterone b) testosterone c) adrenalin
- 4- The hormone which stimulates the storage of glucose sugar in liver is the:
a) Insulin b) estrogen c) thyroxin d) parathormone
- 5- The two factors of the hereditary trait are similar in the.....individual:
a) Pure b) hybrid c) recessive d) Pure and recessive
- 6- Mendel conducted his experiments in pea plant by using pairs of traits.
a) 5 b) 7 c) 9 d) 11
- 7- The two factors of a hereditary trait are similar in the individual.
a) pure b) hybrid c) recessive d) a and c
- 8- Which one of these traits is recessive in humans
a) curly hair b) wide eyes c) free ear lobe d) straight hair
- 9- put the model of DNA molecule.
a) Ohm b) Mendel c) Watson d) Johansson
- 10- is the part of DNA in the cell nucleus.
a) Gene b) Gamete c) Cytoplasm d) no correct answer
- 11- DNA molecule consists of.....strands.
a) two b) three c) four d) five
- 12- The hormone which regulates the level of calcium in the blood is the hormone.
a) calcitonin b) thyroxin c) progesterone d) adrenalin
- 13- The.....hormone liberates the needed energy from the food stuff.
a) growth b) estrogen c) thyroxin d) testosterone
- 14- Glucagon hormone is secreted by
a) pituitary gland b) thyroid gland c) adrenal gland d) pancreas

2) Explain the following:

- 1- Mendel's selecting the pea plant to conduct his experiments.
.....
- 2- When a pure yellow pod pea plant is pollinated with a pure green pod pea plant, it produces plants that are all with green pods.
.....
- 3- The ability of bending the tongue is a dominant trait in the human being
.....
- 4- The model of Watson and Creek of the DNA structure
.....
- 5- How the genes perform their functions.
.....

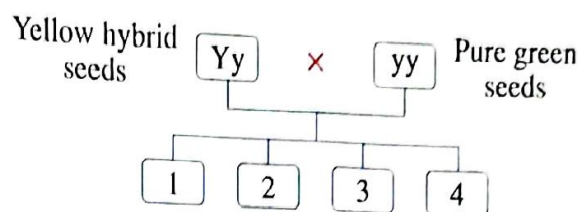
3) Complete the following statements:

- 1- Dwarfism is a disease caused by the decrease of the secretion of..... hormone at the childhood.
- 2-The.....hormone is secreted when the rate of glucose sugar increases in the blood.
- 3- When the amount of glucose decreases in blood, pancreas secretes..... hormone
- 4- Hormones are directly secreted into the blood stream by.....
- 5- Thyroxin is athat regulates food assimilation in your body
- 6- When the secretion of the growth hormone decreases at the childhood, Man is infected by.....
- 7..... traits are not transmitted from one generation to another.
- 8- The scientist is the founder of heredity, he used the seeds of plant, because its flowers are..... and thus it can self-pollinated.
- 9- The trait that appears in all individuals of the first generation in Mendel's experiments is..... trait.
- 10- Chromosome is chemically composed of a nucleic acid called.....which is combined with
- 11- The two scientists and..... were able to make a model for DNA molecule.
- 12- In DNA molecule, the nitrogenous base, Guanine pairs with.....base.
- 13- The gene mutation occurs as a result of the change in the sequence of of the gene.

4) problems

In the fig. replace the number with a suitable letter to give the produced generation?

.....



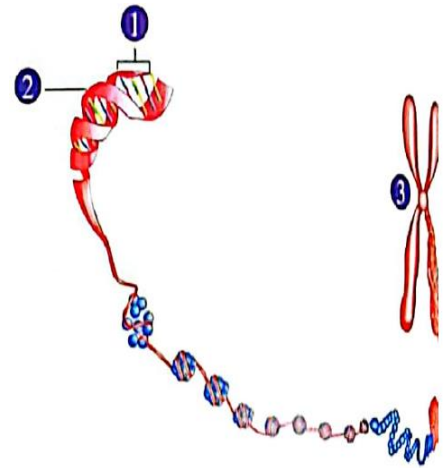
A gland existed in the digestive system of human that has a role in digestion process also it is secretes two hormones with opposite effect due to their functions.

Based on the previous determine each of the following :

1. The name of this gland is
2. The name of the first hormone is
3. The name of the second hormone is

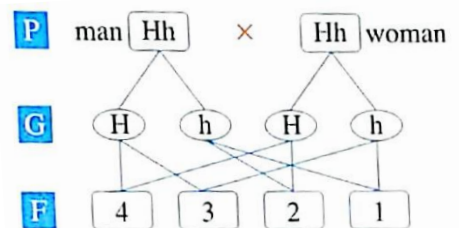
Study the figure in front of you,
then complete the following spaces :

The point number (3) represents which its
chemically structure from number (2) which is
..... and connected with protein, and it carries
..... to the individual, while number (1) that
represents which transmits the hereditary
traits from parents to offspring.



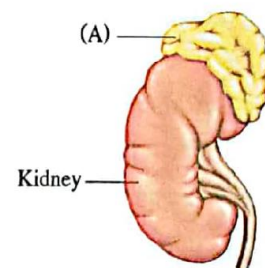
According to your studding answer the following :

1. The opposite figure represents the inheritance
of one of humans traits, what is the number of
the child that carries the recessive trait ?



Look at the opposite figure and answer :

1. What is the name of (A) gland ?
2. Mention the function of the hormone
which the (A) gland secretes.



2. Use symbols to express the mating between man with black hair (Bb) with a woman
has light colour hair (bb), showing the parents, gametes and first generation.

حمل الآن

مجاناً وحصرياً

المراجعة رقم (4)

الترم الثاني



Prep 3 final revision 2nd term

1) Choose the correct answer:

- 1- When heated, red mercury oxide turns into color.
a) green b) silver c) blue d) white
- 2- Carbon dioxide gas is released when..... decomposes by heat.
a) $\text{Cu}(\text{OH})_2$ b) CuCO_3 c) CuSO_4 d) CuO
- 3- The airbag contains the sodium..... substance.
a) sulfate b) azid c) oxide d) carbonate
- 4- Active metals react with water as they substitute hydrogen of water forming metal..... and hydrogen gas evolves.
a) oxide b) nitrate c) hydroxide d) nitrite
- 5-element does not replace hydrogen of acid.
a) Copper b) Zinc c) Sodium d) Aluminium
- 6- When hydrochloric acid is added to a piece of silver.....
a) silver chloride is formed. b) hydrogen gas evolves.
c) silver oxide is formed. d) no reaction occurs.
- 7- The reaction of acids with alkalis is one ofreactions.
a) thermal decomposition b) simple substitution
c) double substitution d) redox
- 8- The reaction ($\text{Cl}_2 + 2\text{e}^- \rightarrow 2\text{Cl}^-$) expresses the process of.....
a) decomposition b) oxidation c) reduction d) substitution
- 9- The reaction of oil with caustic soda is one of the reactions.
a) fast b) relatively slow c) very slow d) extremely slow
- 10- At the beginning of chemical reaction, the concentration of reactants is.....
a) 100 % b) 50 % c) 25 % d) Zero
- 11- Factors affecting the rate of a chemical reaction include all of the followings except.....
a) concentration of reactants. b) nature of reactants.
c) temperature. d) nature of products.
- 12- The reaction rate of sodium chloride solution with silver nitrate solution is measured by the rate of formationprecipitate.
a) sodium nitrate b) sodium chloride c) silver nitrate d) silver chloride
- 13- The number of collisions between reactants molecules increases, and the rate of reaction increases due to an increase in the.....
a) concentration of the products. b) temperature.
c) concentration of the reactants. d) b and c together.

- 14-** Enzymes act as..... in many biological processes.
 a) oxidizing agents b) reducing agents c) catalysts d) disinfectants
- 15-** The flow of electrical charges through a metal wire in a closed circuit represents.....
 a) electrical resistance. b) current intensity.
 c) electric current. d) potential difference.
- 16-**is a device used to measure the electric current intensity.
 a) Ohmmeter b) Voltmeter c) Ammeter d) Rheostat
- 17-** The.....is the current intensity produced by the passage of a quantity of electricity of 1 coulomb through a cross section of a conductor per second.
 a) ohm b) ampere c) volt d) joule
- 18-** If the amount of electricity passing through a conductor is reduced by half, the intensity of the electric current at the same time.
 a) decreases by half b) increases to double
 c) increases to four times d) does not change
- 19-** The intensity of the electric current produced by the passing of a quantity of 100 coulomb of electricity through a cross section of a conductor in a time of 4 seconds is equal to Ampere.
 a) 25 b) 50 c) 100 d) 400
- 20-** The reading of the voltmeter between the poles of the electric cell in the open circuit indicates.....
 a) current intensity. b) potential difference.
 c) electrical resistance. d) electromotive force.
- 21-** The amount of electricity passing through a wire if its intensity is 2 amps in 10 seconds is.....coulombs.
 a) 0.2 b) 5 c) 10 d) 20
- 22-** The unit of measurement of electromotive force is.....
 a) ohm b) ampere c) volt d) joule
- 23-** If the amount of work exerted increases to double, the potential difference..... when the amount of electricity is fixed.
 a) increases 4 times b) doubles c) decreases to half d) decreases by quarter
- 24-** The..... is the current intensity passing through a conductor with a resistance of 1 ohm when the potential difference between the two ends is 1 volt.
 a) ohm b) ampere c) volt d) joule
- 25-** If the current intensity flowing through a resistor of 5 ohm is doubled, the value of the resistance will be..... ohm.
 a) 5 b) 10 c) 20 d) 40

- 26- The value of the resistance of an electric conductor in an electric circuit is changed on changing.....
- dimensions of the conductor.
 - electric current intensity passing through it.
 - quantity of electric charges passes through it.
 - time of connection.
- 27- From the examples of electrochemical cells is.....
- ohmmeter.
 - dynamo.
 - dry cell.
 - rheostat.
- 28- One of the properties of the direct current is.....
- can be transferred for long distances.
 - change direction.
 - constant value and direction.
 - change value and direction.
- 29-is used in electroplating process.
- Electric generator
 - Electric cell
 - Electric motor
 - Electromagnet
- 30- On connecting 5 electric cells, the e.m.f of each one is 2.5 volt in parallel, the total e.m.f of the new battery equals..... volt.
- 2.5
 - 5
 - 7.5
 - 12.5
- 31- The radioactive phenomenon was discovered by the scientist.....
- Ohm.
 - Becquerel.
 - Ampere.
 - Volt.
- 32- All the following are radioactive elements, except.....
- radium.
 - uranium.
 - iron.
 - cesium.
- 33-slides (sheets) used in the manufacture of computer parts and electronic circuits integrated into electrical devices.
- Gold
 - Uranium
 - Iron
 - Silicon
- 34- It is not possible to control the nuclear energy that occurs in.....
- nuclear reactors
 - turbines
 - atomic bombs
 - medical labs
- 35- The.....effects of radiation is a result of changing the sex chromosomes of the cells.
- physical
 - genetic
 - cellular
 - chemical
- 36- The.....effects of radiation is a result of changing the chemical composition of hemoglobin in the blood and becomes unable to carry oxygen.
- physical
 - genetic
 - cellular
 - chemical
- 37- The measuring unit of the absorbed radiation is the.....
- Curie
 - Sievert
 - Volt
 - Ohm
- 38-is considered the founder of heredity.
- Ohm
 - Mendel
 - Becquerel
 - Johansen
- 39- The scientist..... used the term (Gene) instead of the genetic factor.
- Ohm
 - Mendel
 - Becquerel
 - Johansen

- 53-** The.....is the only way for hormones to reach their sites of action.
 a) nerve b) lymph c) blood d) duct
- 54-** All of the following are considered from endocrine glands except..... gland.
 a) pituitary b) thyroid c) adrenal d) sweat
- 55-** The.....gland secretes facilitating hormone during delivery.
 a) pituitary b) thyroid c) adrenal d) ovaries
- 56-** The.....gland secretes a hormone that regulates the growth of the human sexual organs.
 a) pituitary b) thyroid c) adrenal d) ovaries
- 57-** The..... hormone liberates the needed energy from the food stuff.
 a) growth b) estrogen c) thyroxin d) adrenalin
- 58-** The.....element shares in composing thyroxin hormone.
 a) iodine b) calcium c) potassium d) sodium
- 59-** The calcitonin hormone controls the level of.....in the human body.
 a) iodine b) calcium c) potassium d) sodium
- 60-** The two glands that control the level of thyroxin in the blood are.....
 a) pituitary and thyroid. b) pituitary and adrenal.
 c) thyroid and adrenal. d) pituitary and pancreas.
- 61-** The.....hormone stimulates body organs to respond to emergencies.
 a) growth b) estrogen c) thyroxin d) adrenalin
- 62-** The.....hormone stimulates the storage of glucose sugar in the liver.
 a) growth b) estrogen c) insulin d) glucagon
- 63-** The pancreas increases the secretion ofhormone during fasting period.
 a) growth b) estrogen c) insulin d) glucagon
- 64-** All of the following hormones are secreted from reproductive glands, except.....
 a) estrogen b) testosterone c) progesterone d) adrenalin
- 65-**begin to secrete hormones at puberty.
 a) pituitary b) thyroid c) adrenal d) Gonads
- 66-** All of the following have resulted due to hormone disorder, except.....
 a) dwarfism b) gigantism c) diabetes d) cancer

2) Complete the following statements:

- 1- The compound decomposes by heat into its simple components in..... reactions.
- 2- Most metalsdecompose when heated intoand sulfur trioxide gas.
- 3-are one of the most important safety methods in modern cars, as they are filled withgas.
- 4-gas turns lime water turbid , whilegas increases the glow of a burning match.
- 5- In the chemical activity series, metals are arranged inorder according to their
- 6- Potassium reacts with dilute hydrochloric acid to formandgas evolved.
- 7- The reaction of zinc with hydrochloric acid is considered a reaction, while the reaction of sodium carbonate with the same acid is areaction.
- 8- When magnesium replaces copper in one of its salt solutions, a precipitate forms.
- 9- The combination of a substance with hydrogen is aprocess.
- 10- The substance that eliminates oxygen or gives hydrogen during a chemical reaction isagent.
- 11- An oxidizing agentone or more electrons during a chemical reaction.
- 12- The conversion of magnesium into magnesium ion isprocess, while conversion of oxygen atom to oxygen ion isprocess.
- 13- In redox reactions, metals act asagents and non-metals act asagents.
- 14- Iron rusting is consideredreaction, while fireworks considered reaction.
- 15- During the chemical reaction, concentration ofdecreases, while concentration ofincreases by passing time.
- 16- At the end of a complete chemical reaction, the concentration of reactants is%, while the concentration of the products is%.
- 17- The nature of the reacting substances depends onand
- 18- Ionic compounds exist in form ofin their solutions, while covalent compounds exist in form of
- 19- The combustion rate of aluminum wire in a laboratory with pure oxygen isthan its combustion rate in atmospheric air.

- 20- Potatoes produceenzyme which increases the speed of decomposition of solution.
- 21- Catalytic converter uses catalytic agents such as,or iridium.
- 22- Physical properties of the electric current include, potential difference and
- 23- Coulomb ÷ seconds =, which is the measuring unit of
- 24- An electric charge of 10 coulombs passed in a time of 5 seconds in a conductor, so the current intensity is Ampere.
- 25- The potential difference between the two poles of the electrical source in the open circuit (in the absence of an electric current) is called the
- 26- The voltmeter is connected to the electrical circuit in parallel.
- 27- Transmission of electric charges depends on the between two conductors, and it does not depend on amount of
- 28- If the work exerted to transfer an electric charge of 20 coulombs between two points is equal to 60 joules, so the potential difference between the two points is equal to
- 29- The used to control the current and thus control the potential difference.
- 30- joule x sec / coulomb² is the measuring unit of
- 31-is used to measure the resistance value of a conductor directly, which is estimated in units of
- 32- As the length of the wire increase, the resistanceand the current intensity
- 33- The current intensity isproportional to the resistance at constant potential difference.
- 34- Electricity can be obtained from two sources, which are and.....
- 35- An electric current is generated from the dynamo as a result of the conversion ofenergy intoenergy.
- 36- There are two types of electric current, which are and.....
- 37- Electrical cells produce acurrent, while generators producecurrent.
- 38- Controllable artificial nuclear reactions are used forpurposes, while the uncontrollable used forpurposes.
- 39- Nuclear radiation is used to eliminateand improve..... of some plants.

- 40- Sources of radioactive pollution are divided into two types which are sources andsources.
- 41- Exposure to radiation in large doses destroys the,, digestive system and central nervous system.
- 42- Exposure to small radiation doses for several months leads to the appearance of,and cellular effects.
- 43- Radioactive waste is buried completely away from the stream and away from the areas exposed to and volcanoes.
- 44-are traits that are passed from one generation to the next.
- 45- Learning to swim istrait, while blood group istrait.
- 46- Mendel removed the stamens of flowers during his experiments to prevent the occurrence of, while he covered the stigmas of flowers after pollination to prevent the occurrence of
- 47- In pea plants, the trait of the tall stem is atrait, while the trait of wrinkled seed shape is atrait.
- 48- Each hereditary trait is controlled byfactors which separate during the formation of
- 49- The two factors for a genetic trait are similar in theindividual.
- 50- The living organism that carries an impure trait is calledindividual.
- 51- Thetrait appears when the two factors of it are similar, or when one of the factors isand the other is
- 52- If a crossing occurs between two individuals, both of which are hybrids, and this crossing produces 200 individuals, then the number of hybrid individuals produced is likely to beindividuals.
- 53- Mendel's second law is called the law of of hereditary factors.
- 54- Narrow blue eyes are considered ahereditary trait in humans.
- 55- The scientific idea of the dominance of curly hair over straight hair is the principle of.....
- 56- The chromosome is chemically consisting of a nucleic acid called bind with
- 57- Theis considered a part of the DNA which consists of smaller structural units called
- 58- Carotene is converted in the body into vitaminwhich a deficiency of it leads toand losing
- 59-absent in ordinary rice while present in genetically modified rice.
- 60- Theproject showed that more than % of DNA is similar in humans.

- 61- Bothsystem andwork to regulate and coordinate the activities and functions of organs in the organism's body.
- 62- Below the brain, there is a small gland calledgland, and in spite of its small size it is called thegland or thegland.
- 63- The gland responsible for regulating the amount of water in the body isgland.
- 64- When the secretion of the growth hormone decreases in childhood, man suffers from
- 65- The thyroid gland secreteshormone andhormone.
- 66- When the amount of iodine decreases in the food, the secretion of thehormone decreases fromgland.
- 67- When the amount of glucose sugar decreases in blood, pancreas secreteshormone.
- 68- Thehormone is secreted when the percentage of glucose sugar increases in the blood.
- 69-disease is treated with insulin hormone, while the children of the limited growth are treated withhormone.
- 70- In humans, the testes secretehormone, while the ovaries secreteandhormones.
- 71- The scientists managed to obtain large amounts of growth hormone by inserting human gene in the nucleic acid DNA ofcells by using the technology of

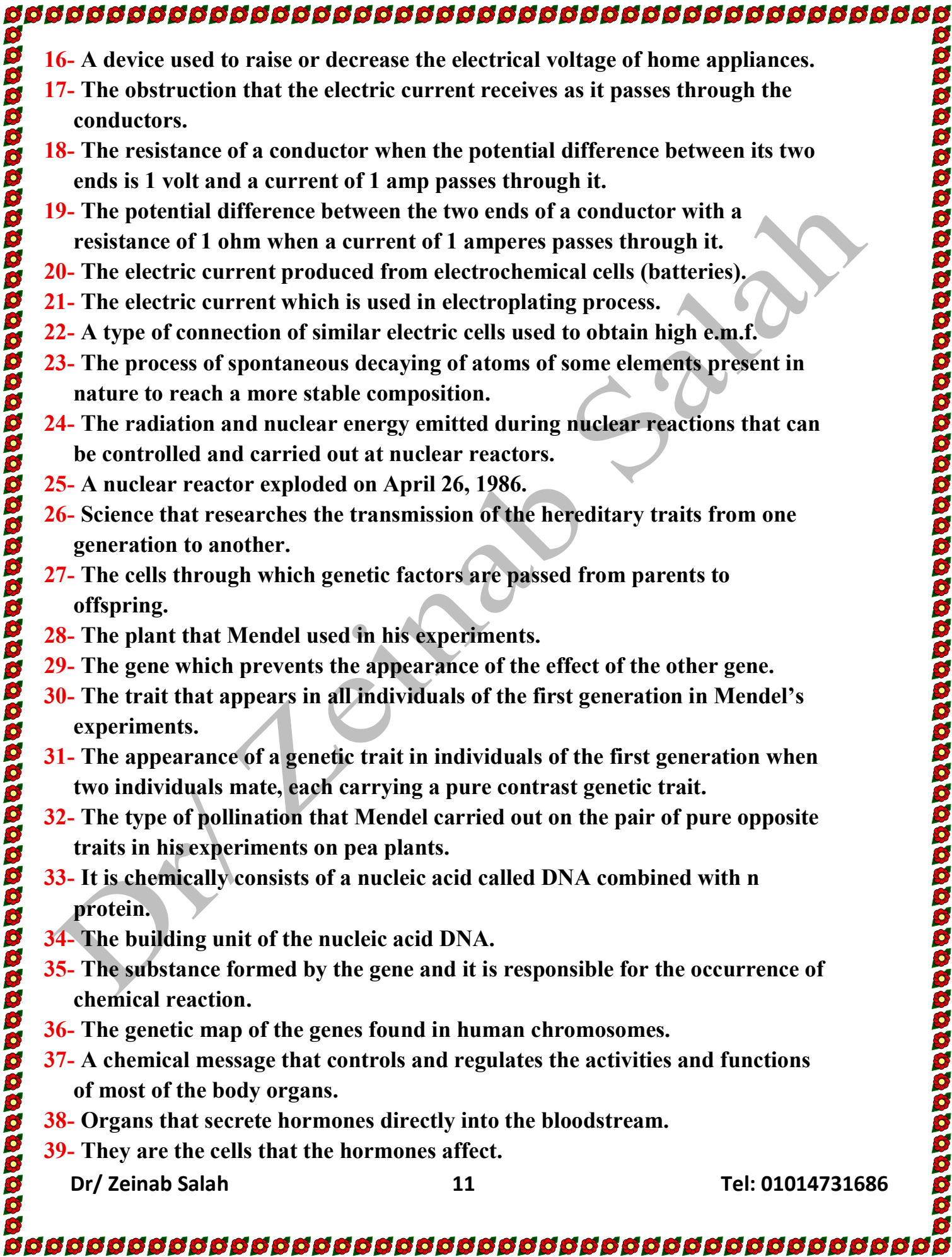
3) Complete the following equations:

- 1- $\xrightarrow{\Delta}$ $2\text{Hg} + \text{O}_2 \uparrow$
- 2- $2\text{NaNO}_3 \xrightarrow{\Delta}$ $+ \text{O}_2 \uparrow$
- 3- $\text{Cu}(\text{OH})_2 \xrightarrow{\Delta}$ $+ \dots \uparrow$
- 4- $\xrightarrow{\Delta}$ $\text{CuO} + \text{CO}_2 \uparrow$
- 5- $\text{CuSO}_4 \xrightarrow{\Delta}$ $\text{CuO} + \dots \uparrow$
- 6- $\xrightarrow{\text{electric spark}}$ $2\text{Na} + 3\text{N}_2 \uparrow$
- 7- $2\text{Na} + 2\text{H}_2\text{O} \rightarrow \dots + \dots \uparrow + \text{Heat}$
- 8- $\text{Zn} + 2\text{HCl} \xrightarrow{\text{dil.}}$ $\text{ZnCl}_2 + \dots \uparrow$
- 9- $+ \dots \xrightarrow{\text{dil.}}$ $2\text{AlCl}_3 + 3\text{H}_2 \uparrow$

- 10- $\text{Fe} + \dots \xrightarrow{\text{dil.}} \text{FeCl}_2 + \text{H}_2 \uparrow$
- 11- $\text{Mg} + \text{CuSO}_4 \rightarrow \dots + \text{Cu} \downarrow$
- 12- $\dots + \dots \rightarrow \text{Na}_2\text{SO}_4 + \text{Cu}(\text{OH})_2$
- 13- $\text{NaOH} + \text{HCl} \rightarrow \dots + \dots$
- 14- $\text{Na}_2\text{CO}_3 + 2\text{HCl} \xrightarrow{\text{dil.}} \dots + \text{H}_2\text{O} + \dots \uparrow$
- 15- $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{NaNO}_3 + \dots \downarrow$
- 16- $\text{CuO} + \text{H}_2 \xrightarrow{\Delta} \dots + \dots$
 ➤ In this reaction, the oxidizing agent is while the reducing agent is
- 17- $\dots \rightarrow 4\text{NO}_2 + \text{O}_2 \uparrow$

4) Write the scientific term of each of the following statements:

- 1- The process of breaking up bonds in the reactants molecules and formation of new bonds in the products molecules.
- 2- A safety mean in the car that can be inflated in emergency situations.
- 3- The reaction of an acid and an alkali to give salt and water.
- 4- A chemical reaction in which one element replaces another element that is less active.
- 5- A chemical reaction in which two compounds exchange radicals to form two new compounds.
- 6- A chemical process which causes the decrease in the oxygen content or the increase in the hydrogen content in a substance.
- 7- A substance that gives oxygen or eliminates hydrogen.
- 8- The substance which loses an electron or more during a chemical reaction.
- 9- The change in the concentration of the reactants and resultants in a unit time.
- 10- A substance that changes the speed of the chemical reaction and does not change.
- 11- Flow of negative electric charges through a conductor.
- 12- The amount of electrical charge flowing through a section of a conductor in one second.
- 13- The electrical charge transmitted by a constant current of 1 amperes per second.
- 14- The condition of an electric conductor which shows the transfer of electricity from or to it, when it is connected to another conductor.
- 15- A device used to measure the electromotive force.

- 
- 16- A device used to raise or decrease the electrical voltage of home appliances.
- 17- The obstruction that the electric current receives as it passes through the conductors.
- 18- The resistance of a conductor when the potential difference between its two ends is 1 volt and a current of 1 amp passes through it.
- 19- The potential difference between the two ends of a conductor with a resistance of 1 ohm when a current of 1 amperes passes through it.
- 20- The electric current produced from electrochemical cells (batteries).
- 21- The electric current which is used in electroplating process.
- 22- A type of connection of similar electric cells used to obtain high e.m.f.
- 23- The process of spontaneous decaying of atoms of some elements present in nature to reach a more stable composition.
- 24- The radiation and nuclear energy emitted during nuclear reactions that can be controlled and carried out at nuclear reactors.
- 25- A nuclear reactor exploded on April 26, 1986.
- 26- Science that researches the transmission of the hereditary traits from one generation to another.
- 27- The cells through which genetic factors are passed from parents to offspring.
- 28- The plant that Mendel used in his experiments.
- 29- The gene which prevents the appearance of the effect of the other gene.
- 30- The trait that appears in all individuals of the first generation in Mendel's experiments.
- 31- The appearance of a genetic trait in individuals of the first generation when two individuals mate, each carrying a pure contrast genetic trait.
- 32- The type of pollination that Mendel carried out on the pair of pure opposite traits in his experiments on pea plants.
- 33- It is chemically consists of a nucleic acid called DNA combined with n protein.
- 34- The building unit of the nucleic acid DNA.
- 35- The substance formed by the gene and it is responsible for the occurrence of chemical reaction.
- 36- The genetic map of the genes found in human chromosomes.
- 37- A chemical message that controls and regulates the activities and functions of most of the body organs.
- 38- Organs that secrete hormones directly into the bloodstream.
- 39- They are the cells that the hormones affect.

- 40- The result when one of the endocrine glands does not act properly.
- 41- Gland that secretes a hormone that regulates the body's overall growth.
- 42- A hormone that contains iodine.
- 43- A hormone its secretion increases in emotion.
- 44- The hormone that causes the enlargement of thyroid gland when decreases.
- 45- The hormone which stimulates the release of glucose sugar from liver.
- 46- The hormone responsible for the appearance of male secondary sex characters.
- 47- The hormone responsible for the appearance of the female secondary sex characters.

5) What is meant by...?

- 1- Chemical activity series.
➤
- 2- The current intensity passing through a conductor in a circuit in 10 seconds is 2 ampere.
➤
- 3- The amount of charge flowing through a conductive cross section per second equals 50 coulombs.
➤
- 4- The potential difference between two ends of a conductor is 5 Volt.
➤
- 5- Electromotive force of a battery is 12 Volt.
➤
- 6- The work done to transfer a quantity of 20 coulombs between the two ends of a conductor is equal to 4400 joules.
➤
- 7- Conductor resistance is 100 ohm.
➤
- 8- Ohm's law.
➤
- 9- Radioactive Elements.
➤
- 10- Radiation pollution.
➤
- 11- Pure Individual.
➤

12- Mendel's First Law (Law of segregation of factors).

➤

13- Genes.

➤

14- Hormone disorder.

➤

6) Mention the importance of:

1- Airbags.

.....

2- Catalytic converter.

.....

3- Iridium (platinum or palladium).

.....

4- Manganese dioxide.

.....

5- Enzymes.

.....

6- Ohmmeter.

.....

7- The dynamo (generator).

.....

8- Electric transformer.

.....

9- Nuclear binding energy.

.....

10- Gloves and clothes which the radiologists wear in hospitals.

.....

11- Nucleic Acid DNA.

.....

12- Human genome project.

.....

13- Genetically modified rice.

.....

14- Growth hormone.

.....

7) Put (✓) or (X) in front of the following statements:

- 1- When sodium nitrate is heated, the oxygen gas rises up. ()
- 2- Hydrochloric acid reacts with sodium carbonate and produces a gas that turbid clear lime water. ()
- 3- Copper replaces magnesium in its salt solutions. ()
- 4- When hydrochloric acid is added to copper turning, no reaction occurs. ()
- 5- Copper replaces gold in its salt solutions, while the opposite doesn't occur. ()
- 6- Oxidation and reduction reactions occur separately. ()
- 7- Oxidation is a chemical process in which an atom gains one or more electrons. ()
- 8- A chlorine atom converts to chloride ion when it loses its valence electron. ()
- 9- The conversion of Fe^{+3} to Fe^{+2} is considered a reduction process. ()
- 10- The reaction of iron rusting is very slow reaction because it occurs in very short time. ()
- 11- Some chemical reactions take several months to occur, such as the reaction of oil formation inside the Earth. ()
- 12- The medicines are considered from the examples of the chemical reactions products. ()
- 13- The reactions of ionic compounds are slower than that of covalent compounds. ()
- 14- The speed of chemical reactions decreases with increasing temperature. ()
- 15- The dissolving speed of an effervescent tablet in a certain volume of cold water is less than a similar tablet of the same volume in hot water. ()
- 16- When 5 gram of catalytic agent is used in a chemical reaction, its mass after the end of the chemical reaction is less than 5 g. ()
- 17- The catalyst changes the speed of the chemical reaction without affecting beginning or stopping of the reaction. ()
- 18- When manganese dioxide powder is added to a hydrogen peroxide solution, the amount of manganese dioxide increases. ()
- 19- Ohm = Coulomb x Volt. ()
- 20- If work of 120 joules is done to transfer a quantity of charge of 60 coulombs so the potential difference is equal to 2 volt. ()
- 21- If the electric potential of a conductor (x) is greater than of a conductor (y), so the current flows through the conductor (x) to the conductor (y). ()
- 22- The direct current can be transferred for long distances. ()
- 23- The alternating current can be converted into a direct current. ()

- 24- The e.m.f of several cells which are connected in series is equal to the e.m.f of one cell. ()
- 25- The radioactive elements are unstable due to its excess nuclear energy. ()
- 26- Selenium is one of the radioactive elements. ()
- 27- Alpha, beta, and gamma radiation are considered visible radiation. ()
- 28- Dr. Ali Mostafa Mosharafa had important theories in the field of atoms and radiation and the atomic bomb industry is based on them. ()
- 29- Nuclear energy is used in the field of Space exploration. ()
- 30- The nuclear energy is used in medical field in diagnose and treatment of some diseases. ()
- 31- The limit of the safe dose of nuclear radiation differs according to the age of the person. ()
- 32- The dominant trait is the trait which completely disappears in the first generation. ()
- 33- Individuals that inherit at least one gene for the dominant trait from one parent will inherit the dominant trait. ()
- 34- One of the dominant traits of pea plants is the swollen pod. ()
- 35- If the result of a cross between two parents is 50% dominant and 50% recessive, this means that both parents have a pure trait. ()
- 36- When a pure short stem pea plant is pollinated with a hybrid long stem one, all the produced plants are short stem. ()
- 37- Children can be born with freckles in face even their parents do not have. ()
- 38- Mendel's second law is known as the law of segregation of factors. ()
- 39- The free ear lobe is a dominant trait. ()
- 40- The presence of freckles in the face is from recessive traits in the human. ()
- 41- A genetic trait will change if a change in the order of the gene's nucleotides responsible for this trait occurs. ()
- 42- The endocrine glands secrete more than 500 hormones in the human body. ()
- 43- Endocrine glands secrete their hormones into the bloodstream through special duct. ()
- 44- Pituitary gland is located below the pancreas. ()
- 45- Exophthalmic goiter has resulted due to thyroxin hormone deficiency. ()

8) Correct the underlined words:

- 1- Most of the metal carbonates decompose into carbon dioxide and metal.
- 2- When sodium reacts with chlorine, sodium undergoes reduction process.
- 3- At the beginning of a chemical reaction, the concentration of product is 100 %.
- 4- The measuring unit of the concentration of the products from chemical reaction is gram/second.
- 5- The time required to complete ionic compound reactions is equal to the time required to complete covalent compound reactions under the same reaction conditions.
- 6- The difference between the mass of manganese dioxide and its mass after ending the chemical reaction of decomposition of hydrogen peroxide equals whole one.
- 7- Nitrogen pentoxide gas decomposes into nitrogen and oxygen gas.
- 8- The reaction of silver nitrate solution with sodium chloride solution is a slow reaction.
- 9- Amylase enzyme found in sweet potato.
- 10- Electric resistance is the work done to transfer a quantity of charge of one coulomb between the two poles of a conductor.
- 11- Quantity of electric charge is measured in Ohm unit.
- 12- To transfer an electric charge of 10 coulomb between two points with potential difference of 20 volts, a work of 2 joule is required.
- 13- $\text{Coulomb} = \text{Ampere} \times \text{Volt}$.
- 14- The ampere is the potential difference between the two ends of a conductor when 1 joule is applied to transfer a quantity of 1 coulomb between the two ends of this conductor.
- 15- Ammeter is connected in the electrical circuit in parallel.
- 16- Joule is the unit of measurement of electric charge.
- 17- Ohm is equivalent to joules / amperes. Seconds
- 18- Sliding rheostat device controls the value of the resistance by controlling the mass of the metallic wire coil.
- 19- The electromotive force of a battery whose cells are connected in series is equal to that one whose cells are connected in parallel.
- 20- Ohm detects the emission of invisible rays from the element uranium that has the ability to penetrate through solids.
- 21- In the industrial field the nuclear energy is used to convert glass into silicon chips.
- 22- The radiologist should not be exposed to radiation in amounts more than 5 Sievert per year.

- 23- Millisievert = 10^3 Sievert.
- 24- The changes that take place to the living organism due to its exposure to radiations are from genetic effects of radiation pollution.
- 25- The ability to write is a hereditary trait.
- 26- The recessive trait is always impure.
- 27- Mendel chose 10 traits in pea plant to conduct his experiments.
- 28- When a male and a female with a same genotype (Bb), the percentage of the offspring which has (BB) as a gene type is 75%.
- 29- The genetic structure (aaBb) gives 3 types of gametes.
- 30- The genetic structure of wrinkled yellow coloured seeds of a pea plant is yySS.
- 31- In pea plants, the green color of the seed dominates over the yellow color.
- 32- A female fruit fly with short wings crossed with a male with long wings. All of the resulting flies had long wings. Two of these offspring crossing with each other so the percentage of their offspring with long wings in the second generation was 50%.
- 33- On pollination of two pea plants with each other, the genetic structure for each of them (Aa), so the ratio between the resulting offspring which carry the genotype (AA) to the total number of offspring is 1:3.
- 34- Genes are parts of DNA found in the cytoplasm of the cell.
- 35- Adrenal gland secretes a hormone activates the thyroid gland.
- 36- To protect thyroid gland from enlargement, we eat food with a balanced ratio of calcium.
- 37- Glucagon hormone is secreted by the two ovaries.
- 38- The hormone that promotes the growth of the endometrium is the estrogen hormone.

9) Compare between ...?

- 1- Oxidation and reduction processes concerning traditional concept and electronic concept.
- 2- The oxidizing agent and the reducing agent according to the electronic concept.
- 3- Positive catalytic reactions and negative catalytic reactions.
- 4- Ammeter and voltmeter.
- 5- The direct current and the alternating current, in view of the field of using.
- 6- The hereditary traits and the acquired traits.
- 7- The dominant trait and the recessive trait.
- 8- Pure individual and hybrid individual.
- 9- Dwarfism and gigantism in human being.

10) Give reason for each of the following:

- 1- Chemical reactions are very important in our daily lives.
➤
- 2- When a quantity of mercury oxide is heated, its mass decreases and its color changes.
➤
- 3- A black substance forms when a quantity of green copper carbonate is heated.
➤
- 4- A black color appears when heating a quantity of blue copper sulphate.
➤
- 5- Sodium nitrate color changes to yellowish white when heated.
➤
- 6- Do not extinguish sodium fires with water.
➤
- 7- Gold does not react with acids.
➤
- 8- Gas bubbles rise when a piece of aluminum is added to hydrochloric acid.
➤
- 9- The reaction of aluminum with hydrochloric acid is vigorous than the reaction of zinc with hydrochloric acid.
➤
- 10- Silver nitrate solution should not be stored in aluminum containers.
➤
- 11- Oxidation and reduction are concurrent processes.
➤
- 12- The reaction of sodium with chlorine involves oxidation in spite absence of oxygen.
➤
- 13- Metals act as reducing agents and non-metals act as oxidizing agents.
➤
- 14- Chemical reactions between ionic compounds faster than between covalent compounds.
➤
- 15- The reaction of sodium chloride with hydrochloric acid is a fast reaction.
➤
- 16- The reaction rate of HCl with iron filings is faster than its reaction with a piece of iron of the same mass.
➤

17- It is preferable to use divided nickel in the hydrogenation of oils.

➤

18- The speed of a chemical reaction increases with increasing concentration of the reactants.

(The speed of a chemical reaction increases with increasing temperature.)

➤

19- Food is stored in the refrigerator for a long time.

➤

20- A catalyst is used in some chemical reactions.

➤

21- Adding pieces of potato to a hydrogen peroxide solution increases the speed of the chemical reaction.

➤

22- Ammeter is connected to the electrical circuit in series.

➤

23- Transmission of electrical charges from one charged conductor to another charged conductor.

➤

24- The electric current does not transfer from the conductor with an electrical voltage of 20 volts to another of voltage 30 volts.

➤

25- There is no electric current flow when two charged conductors with the same voltage are connected.

➤

26- The voltmeter is connected to both ends of the electrical circuit.

➤

27- The voltmeter is connected between the two ends of the electrical source (battery).

➤

28- To charge the mobile phone, it is necessary to use an electrical adapter (charger).

➤

29- Use of rheostats in some electrical circuits.

➤

30- Increased conductor resistance by increasing wire length.

➤

31- The electrochemical cell is considered a source of electrical energy.

(Naming electrochemical cells by this name.)

➤

32- Electric generators are used in power plants.

➤

33- The current used in lighting houses is known as alternating current.

➤

34- The alternating current (A.C.) is preferred than the direct current (D.C.).

➤

35- DC is represented by a straight line parallel to the horizontal axis.

➤

36- Some cells are connected in the electric circuit in series.

➤

37- Some cells are connected in the electric circuit in parallel.

➤

38- The connected cells of a battery in parallel work as one cell.

➤

39- The atom's nucleus is considered as an energy store.

➤

40- Some elements are called radioactive elements.

(Uranium is one of the radioactive elements.)

➤

41- The radioactive waste should be buried far from the underground water streams.

➤

42- Radiation pollution may occur in the areas where nuclear explosions don't occur.

➤

43- Learn to walk in children is not considered a genetic trait.

➤

44- The recessive trait is always pure.

➤

45- Mendel is considered the founder of genetics.

➤

46- Mendel chose the pea plant to conduct his experiments.

➤

47- Mendel let the pea plants self-pollinate for several generations.

➤

48- Mendel's first law is known as the law of segregation of factors.

➤

49- When a pure yellow pod pea plant is pollinated with a pure green pod pea plant, they produce plants all are of green pods.

➤

50- Resulted individuals with a ratio of 1:1 may be produced on crossing dominant trait with a recessive trait.

➤

51- The ability of rolling the tongue is a dominant trait in the human being.

➤

52- Hereditary information is found in DNA.

➤

53- The efforts of Watson and Crick have a significant role at the developing of genetics.

➤

54- The blood is the only way by which the hormone reaches its location.

➤

55- Pituitary gland is called the master gland.

➤

56- The height of some persons may reach 2 meters.

➤

57- The height of some persons may reach less than half metre.

➤

58- Thyroid gland plays an important role in controlling the level of calcium in the blood.

➤

59- The two adrenal glands have an important role when man is exposed to emergency.

➤

60- Pancreas is a double function gland.

➤

61- The reproductive glands are important during puberty (in teenagers).

➤

11) What happened in each of the following cases:

1- Heating a quantity of red mercury oxide.

➤

2- Bringing a burning splint close to the gas produced by the thermal decomposition of HgO.

➤

3- Heating a quantity of blue copper hydroxide.

➤

4- A rapid and sudden decrease in the speed of modern cars.

➤

5- Placing a piece of magnesium ribbon in a solution of blue copper sulphate.

➤

6- Place a very small piece of sodium in water.

➤

7- Adding sodium carbonate salt to diluted hydrochloric acid.

➤

8- Adding hydrochloric acid to a quantity of copper turning.

➤

9- Adding acid to alkali.

➤

10- Replacing hydrogen of acid with a metal.

➤

11- Passing hydrogen gas over hot copper oxide.

➤

12- Oil reacting with caustic soda.

➤

13- Reaching the concentration of the reactants in a chemical reaction to zero.

➤

14- Adding sodium hydroxide solution to copper sulphate solution.

➤

15- Replacing iron filings with a piece of iron of the same mass when reacting with dil. hydrochloric acid.

➤

16- Replacing diluted HCl with concentrated acid when it reacts with magnesium strip.

➤

17- The temperature of the reaction increases.

(Increasing the surface area of the reactants.)

➤

18- Dispersing the reactants used in any chemical reaction.

➤

19- Adding small amount of manganese dioxide to hydrogen peroxide.

➤

20- Absence or weakness of the strong attraction in the atom between the nucleus and the valence electrons.

➤

21- Increasing the amount of electrical charge passing through a cross section of a conductor per second.

➤

22- Increasing the flow of the electric charge to double at the same time.

(In relation to the intensity of the electric current)

➤

23- Increasing the amount of electricity to double and reducing its flow time by half.

(In relation to the intensity of the current)

➤

24- Two charged conductors came into contact and the voltage of the first conductor was greater than the voltage of the second conductor.

➤

25- Connecting two conductors with the same voltage by a wire.

➤

26- Increasing the number of electric cells connected in series.

(Relative to the electromotive force)

➤

27- Increasing the number of electric cells connected in parallel.

(Connecting similar poles together for three electrical cells.)

(Relative to the electromotive force)

➤

28- Exposing a man for a large dosage of atomic radiation for a short period of time.

➤

29- Decreasing the number of red blood cells in the human body.

➤

30- Exposing red blood cells to small dosage of radiation for a long time.

➤

31- A dominant gene for one of the traits is present with another for the same characteristic. (A dominant gene exists with a recessive one.)

➤

32- A person obtains a recessive gene from both parents.

➤

33- Mating between two pure individuals different in two pairs or more of contrasting traits.

➤

34- Male with straight hair and narrow eye married with female of pure curly hair and pure wide eyes.

➤

35- The gene cannot produce its specific enzyme.

➤

36- Dependence on rice as a main food.

➤

37- Deficiency of growth hormone secretion at childhood.

➤

38- The secretion of growth hormone is increased at childhood.

➤

39- Thyroxin hormone secretion increases.

➤

40- Man takes a little amount of iodine in his food.

➤

41- A person is exposed to a frightening situation.

➤

42- Glucose sugar level increased in blood.

➤

43- Pancreas decreases its secretion of the insulin hormone.

➤

44- Pancreas does not secrete glucagon hormone.

➤

12) Problems:

1- Calculate the intensity of the electric current generated by the passage of a quantity of electricity of 6000 coulomb in a cross section of a conductor in 5 minutes.

.....

.....

- 2- Calculate the amount of electrical charges passing through the filament of a lightbulb in a time of 0.4 seconds if you know that the current passing through it is 3 ampere.

.....

- 3- Calculate the passage time of a quantity of 25 coulomb if you know that the intensity of the electric current is 10 ampere.

.....

- 4- If the work done to transfer a quantity of charge through a conductor equals 150 joule and potential difference across its terminals is 2.5 volt. Calculate the electric current intensity which passes in time equals 2 minutes in this conductor.

.....

- 5- If the amount of work done to transfer an electric charge of 30 coulomb between two points is equal to 33000 joule, calculate the potential difference between the two points.

.....

- 6- Calculate the work done to transfer an electrical charge of 5 coulomb through a conductor if the potential difference between the two ends of the conductor is 3 volt.

.....

- 7- If the potential difference between two ends of an electrical source is 100 volt, calculate the amount of electricity transmitted when that power source exerts a work of 200 joule.

.....

- 8- If the amount of work done to transfer an electric charge of 480 coulomb between two points in a time of two minutes is equal to 960 joule, calculate the intensity of the electric current and the potential difference between the two points.

.....

.....

- 9- Calculate the current intensity, if the potential difference between the two ends of a conductor 5 volt when a work of 200 joule is done to transfer a quantity of electricity passing through a cross section of the conductor in a time of 2 seconds.

.....
.....

- 10- Calculate the current intensity in a 20 ohm resistor electrical device when the potential difference between the two ends is 220 volts.

.....

- 11- If the potential difference between the two ends of an electrical source is 240 volt and the current intensity is 8 ampere, what is the electric current intensity if it is connected to an electrical source with a potential difference of 220 volt?

.....
.....

- 12- Calculate the amount of electricity passing through a 220 ohm resistor for two minutes when connected to a 220 volt battery.

.....
.....

- 13- If a work of 200 joule is required to transfer a quantity of 40 coulomb through a 10 ohms resistor wire, calculate the intensity of the current in the wire.

.....
.....

- 14- Illustrate in the diagram how to connect four electric cells to obtain a battery with the following electromotive force values (e.m.f for one cell= 1.5 volt):

a) 6 volt. b) 4.5 volt. c) 3 volt. d) 1.5 volt.

13) Explain on genetic bases the result of crossing:

1- A pea plant with pure white flower and another with pure red flowers.

.....

2- Two pea plants that both have hybrids red flowers.

.....

3- A pea plant with white flower and another with hybrid red flowers.

.....

4- A tall-stemmed, red flowered pea plant (TTRR) and a short-stemmed, white flowered plant (ttrr).

.....

14) Study the opposite figures then answer:

1- The opposite graph illustrates the change in concentration of reactants and resultants in respect to time.

a) Write the letter(s) which indicate(s) the following:

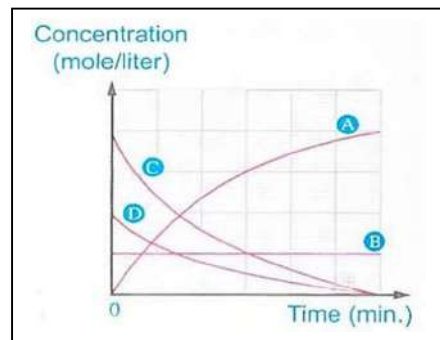
Reactants:

Resultants:

Catalyst:

b) Write the balanced equation that indicates this graph.

.....



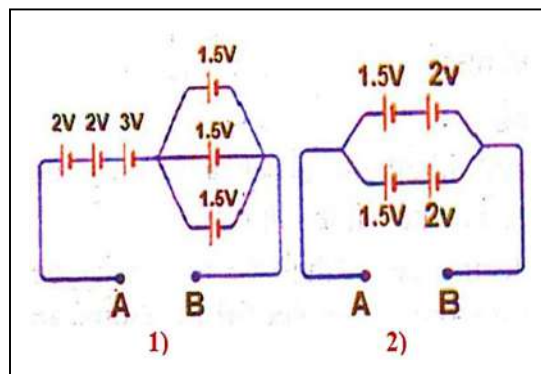
2- Calculate the total electromotive force between A and B in:

a) Figure (1).

.....

b) Figure (2).

.....



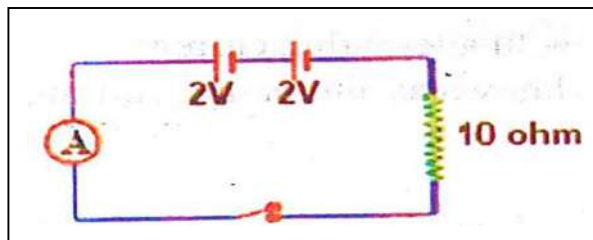
3- In the opposite figure find:

a) The e.m.f of the battery.

.....

b) The reading of ammeter.

.....



4- In the opposite electric circuit, Calculate:

a) Reading of the ammeter.

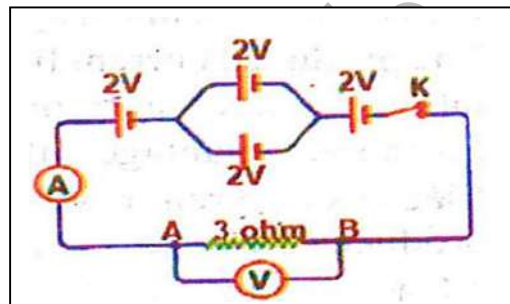
.....

.....

b) Amount of work done to transfer quantity of electricity between two points A & B through 5 minutes.

.....

.....



5- In the opposite circuit:

Reading of the ammeter was (3 Ampere) and reading of the voltmeter (15 volt) and when slider of the rheostat moves reading of ammeter becomes (9 ampere).

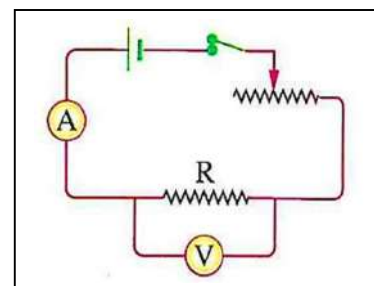
a) What happens to the length of wire of rheostat (with explaining)?

➤
.....

b) Calculate the potential difference between two terminals of the fixed resistance after change the rheostat.

.....

.....



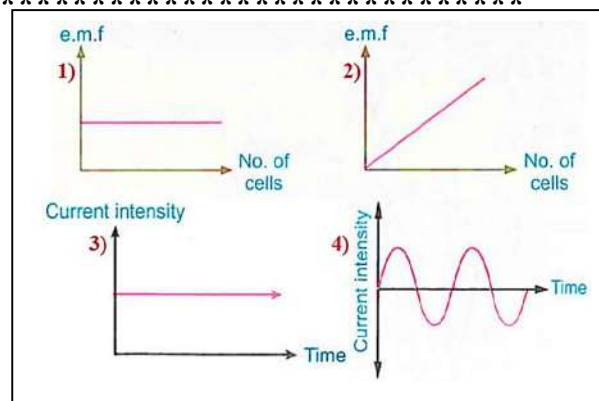
6- Study the following figures, then complete:

a) Figure (1) represents the connection of several similar cells in

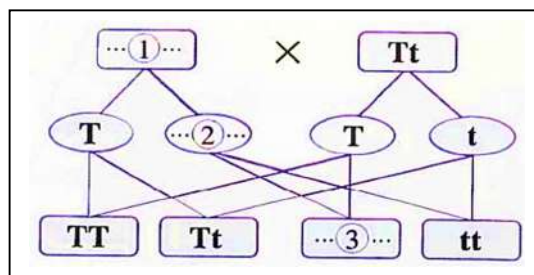
b) Figure (2) represents the connection of several similar cells in

c) Figure (3) representselectric current that hasintensity.

d) Figure (4) representselectric current that hasintensity and direction.



7- The following figure shows self-pollination between two pea plants of hybrid tall stem:

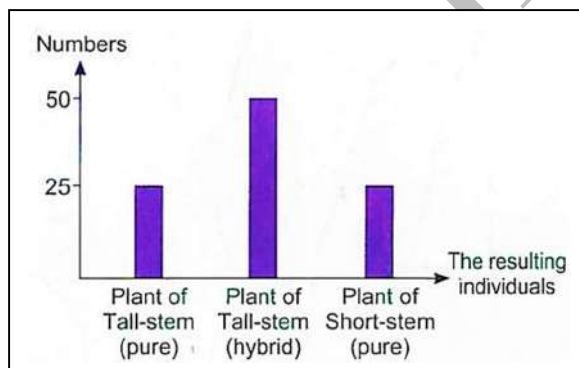


a) (1) (2) (3)

b) The ratio of produced generation is

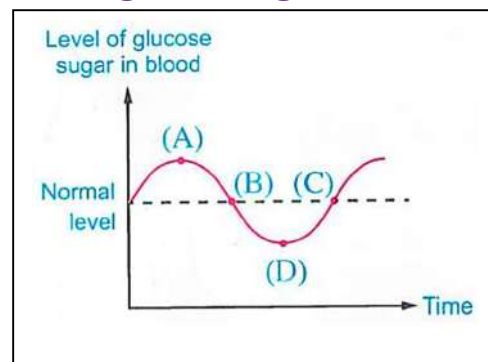
..... (dominant trait) : (recessive trait).

8- The opposite figure represents the numbers of the resulting individuals from the mating between two pea plants both of them are tall stem. Write genetic method to express this mating.



.....

9- The opposite graph represents some changes in the level of glucose sugar in human blood.



a) What is the name of the hormone which:
 Changes the state from (A) to (B)?

➤

Changes the state from (D) to (C)?

➤

b) Which gland responsible for secretion of these hormones?

➤

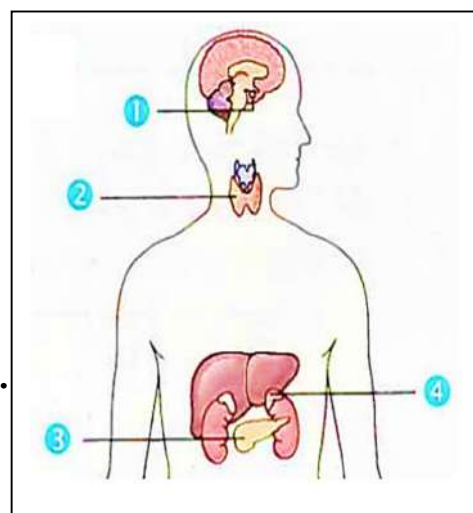
10- The following figure shows some endocrine glands in the human body, complete:

a) The label (1) representsgland that is located below theand consists oflobes.

b) The label (2) representsgland which is located in the front surface of the

c) The label (3) representsgland which is located between theand the

d) The label (4) representsgland which is located adhering to the top of each



Prep 3 final revision 2nd term (answered)

1) Choose the correct answer:

- 1- When heated, red mercury oxide turns into color.
a) green b) silver c) blue d) white
- 2- Carbon dioxide gas is released when..... decomposes by heat.
a) $\text{Cu}(\text{OH})_2$ b) CuCO_3 c) CuSO_4 d) CuO
- 3- The airbag contains the sodium..... substance.
a) sulfate b) azid c) oxide d) carbonate
- 4- Active metals react with water as they substitute hydrogen of water forming metal..... and hydrogen gas evolves.
a) oxide b) nitrate c) hydroxide d) nitrite
- 5-element does not replace hydrogen of acid.
a) Copper b) Zinc c) Sodium d) Aluminium
- 6- When hydrochloric acid is added to a piece of silver.....
a) silver chloride is formed. b) hydrogen gas evolves.
c) silver oxide is formed. d) no reaction occurs.
- 7- The reaction of acids with alkalis is one ofreactions.
a) thermal decomposition b) simple substitution
c) double substitution d) redox
- 8- The reaction ($\text{Cl}_2 + 2\text{e}^- \rightarrow 2\text{Cl}^-$) expresses the process of.....
a) decomposition b) oxidation c) reduction d) substitution
- 9- The reaction of oil with caustic soda is one of the reactions.
a) fast b) relatively slow c) very slow d) extremely slow
- 10- At the beginning of chemical reaction, the concentration of reactants is.....
a) 100 % b) 50 % c) 25 % d) Zero
- 11- Factors affecting the rate of a chemical reaction include all of the followings except.....
a) concentration of reactants. b) nature of reactants.
c) temperature. d) nature of products.
- 12- The reaction rate of sodium chloride solution with silver nitrate solution is measured by the rate of formationprecipitate.
a) sodium nitrate b) sodium chloride c) silver nitrate d) silver chloride
- 13- The number of collisions between reactants molecules increases, and the rate of reaction increases due to an increase in the.....
a) concentration of the products. b) temperature.
c) concentration of the reactants. d) b and c together.

- 14- Enzymes act as..... in many biological processes.
a) oxidizing agents b) reducing agents c) catalysts d) disinfectants
- 15- The flow of electrical charges through a metal wire in a closed circuit represents.....
a) electrical resistance. b) current intensity.
c) electric current. d) potential difference.
- 16-is a device used to measure the electric current intensity.
a) Ohmmeter b) Voltmeter c) Ammeter d) Rheostat
- 17- The.....is the current intensity produced by the passage of a quantity of electricity of 1 coulomb through a cross section of a conductor per second.
a) ohm b) ampere c) volt d) joule
- 18- If the amount of electricity passing through a conductor is reduced by half, the intensity of the electric current at the same time.
a) decreases by half b) increases to double
c) increases to four times d) does not change
- 19- The intensity of the electric current produced by the passing of a quantity of 100 coulomb of electricity through a cross section of a conductor in a time of 4 seconds is equal to Ampere.
a) 25 b) 50 c) 100 d) 400
- 20- The reading of the voltmeter between the poles of the electric cell in the open circuit indicates.....
a) current intensity. b) potential difference.
c) electrical resistance. d) electromotive force.
- 21- The amount of electricity passing through a wire if its intensity is 2 amps in 10 seconds is.....coulombs.
a) 0.2 b) 5 c) 10 d) 20
- 22- The unit of measurement of electromotive force is.....
a) ohm b) ampere c) volt d) joule
- 23- If the amount of work exerted increases to double, the potential difference..... when the amount of electricity is fixed.
a) increases 4 times b) doubles c) decreases to half d) decreases by quarter
- 24- The..... is the current intensity passing through a conductor with a resistance of 1 ohm when the potential difference between the two ends is 1 volt.
a) ohm b) ampere c) volt d) joule
- 25- If the current intensity flowing through a resistor of 5 ohm is doubled, the value of the resistance will be..... ohm.
a) 5 b) 10 c) 20 d) 40

- 26- The value of the resistance of an electric conductor in an electric circuit is changed on changing.....
- dimensions of the conductor.
 - electric current intensity passing through it.
 - quantity of electric charges passes through it.
 - time of connection.
- 27- From the examples of electrochemical cells is.....
- ohmmeter.
 - dynamo.
 - dry cell.
 - rheostat.
- 28- One of the properties of the direct current is.....
- can be transferred for long distances.
 - change direction.
 - constant value and direction.
 - change value and direction.
- 29-is used in electroplating process.
- Electric generator
 - Electric cell
 - Electric motor
 - Electromagnet
- 30- On connecting 5 electric cells, the e.m.f of each one is 2.5 volt in parallel, the total e.m.f of the new battery equals..... volt.
- 2.5
 - 5
 - 7.5
 - 12.5
- 31- The radioactive phenomenon was discovered by the scientist.....
- Ohm.
 - Becquerel.
 - Ampere.
 - Volt.
- 32- All the following are radioactive elements, except.....
- radium.
 - uranium.
 - iron.
 - cesium.
- 33-slides (sheets) used in the manufacture of computer parts and electronic circuits integrated into electrical devices.
- Gold
 - Uranium
 - Iron
 - Silicon
- 34- It is not possible to control the nuclear energy that occurs in.....
- nuclear reactors
 - turbines
 - atomic bombs
 - medical labs
- 35- The.....effects of radiation is a result of changing the sex chromosomes of the cells.
- physical
 - genetic
 - cellular
 - chemical
- 36- The.....effects of radiation is a result of changing the chemical composition of hemoglobin in the blood and becomes unable to carry oxygen.
- physical
 - genetic
 - cellular
 - chemical
- 37- The measuring unit of the absorbed radiation is the.....
- Curie
 - Sievert
 - Volt
 - Ohm
- 38-is considered the founder of heredity.
- Ohm
 - Mendel
 - Becquerel
 - Johansen
- 39- The scientist..... used the term (Gene) instead of the genetic factor.
- Ohm
 - Mendel
 - Becquerel
 - Johansen

- 40- The recessive trait appears in one offspring if he inherits.....from both parents.
 a) two dominant genes b) one dominant gene
 c) one recessive and one dominant gene d) two recessive genes
- 41- The percentage of offspring that carry a recessive trait for two parents who are both hybrid is.....%.
 a) zero b) 25 c) 50 d) 75
- 42- If the genetic structure of one of the producing individuals (aa), the genetic structure of the parents may be.....
 a) Aa x AA b) AA x AA c) aa x Aa d) aa x AA
- 43- When a male with the genotype (Bb) mates with a female with the genotype (bb), the probability of their offspring having the (BB) genotype is%.
 a) zero b) 25 c) 50 d) 75
- 44- The genotype of a short-stemmed, white-flowered pea plant is.....
 a) ttTT b) TTrr c) ttrr d) TTRR
- 45- The ratio of gametes TR is% in a pea plant whose genetic structure is TtRr.
 a) zero b) 25 c) 50 d) 75
- 46- The genetic structure AABB produces..... of gametes.
 a) one type b) two types c) three types d) four types
- 47- According to Mendel's second law, the recessive trait appears in the second generation in the ratio.....%.
 a) zero b) 25 c) 50 d) 75
- 48- The two scientists.....discovered the means of how the gene controls the appearance of hereditary traits.
 a) Badel and Tatum b) Watson and Crick
 c) Watson and Tatum d) Crick and Badel
- 49- The scientists.....have constructed a model of a DNA.
 a) Badel and Tatum b) Watson and Crick
 c) Watson and Tatum d) Crick and Badel
- 50- From the dominant traits in the human being is the.....trait.
 a) straight hair b) wide eyes c) no face dimples d) presence of face freckles
- 51- All of the following are dominant human traits except.....
 a) curly hair b) freckles c) wide eyes d) roll the tongue
- 52- The genetically modified rice contains.....
 a) vitamin A b) folic acid c) carotene d) melanin

- 53- The.....is the only way for hormones to reach their sites of action.
a) nerve b) lymph c) blood d) duct
- 54- All of the following are considered from endocrine glands except..... gland.
a) pituitary b) thyroid c) adrenal d) sweat
- 55- The.....gland secretes facilitating hormone during delivery.
a) pituitary b) thyroid c) adrenal d) ovaries
- 56- The.....gland secretes a hormone that regulates the growth of the human sexual organs.
a) pituitary b) thyroid c) adrenal d) ovaries
- 57- The..... hormone liberates the needed energy from the food stuff.
a) growth b) estrogen c) thyroxin d) adrenalin
- 58- The.....element shares in composing thyroxin hormone.
a) iodine b) calcium c) potassium d) sodium
- 59- The calcitonin hormone controls the level of.....in the human body.
a) iodine b) calcium c) potassium d) sodium
- 60- The two glands that control the level of thyroxin in the blood are.....
a) pituitary and thyroid. b) pituitary and adrenal.
c) thyroid and adrenal. d) pituitary and pancreas.
- 61- The.....hormone stimulates body organs to respond to emergencies.
a) growth b) estrogen c) thyroxin d) adrenalin
- 62- The.....hormone stimulates the storage of glucose sugar in the liver.
a) growth b) estrogen c) insulin d) glucagon
- 63- The pancreas increases the secretion ofhormone during fasting period.
a) growth b) estrogen c) insulin d) glucagon
- 64- All of the following hormones are secreted from reproductive glands, except.....
a) estrogen b) testosterone c) progesterone d) adrenalin
- 65-begin to secrete hormones at puberty.
a) pituitary b) thyroid c) adrenal d) Gonads
- 66- All of the following have resulted due to hormone disorder, except.....
a) dwarfism b) gigantism c) diabetes d) cancer

2) Complete the following statements:

- 1- The compound decomposes by heat into its simple components in thermal decomposition reactions.
- 2- Most metals sulphates decompose when heated into metal oxide and sulfur trioxide gas.
- 3- Air bags are one of the most important safety methods in modern cars, as they are filled with nitrogen gas.
- 4- Carbon dioxide gas turns lime water turbid, while oxygen gas increases the glow of a burning match.
- 5- In the chemical activity series, metals are arranged in descending order according to their chemical activity.
- 6- Potassium reacts with dilute hydrochloric acid to form potassium chloride and hydrogen gas evolved.
- 7- The reaction of zinc with hydrochloric acid is considered a simple substitution reaction, while the reaction of sodium carbonate with the same acid is a double substitution reaction.
- 8- When magnesium replaces copper in one of its salt solutions, a red copper precipitate forms.
- 9- The combination of a substance with hydrogen is a reduction process.
- 10- The substance that eliminates oxygen or gives hydrogen during a chemical reaction is a reducing agent.
- 11- An oxidizing agent gains one or more electrons during a chemical reaction.
- 12- The conversion of magnesium into magnesium ion is oxidation process, while conversion of oxygen atom to oxygen ion is reduction process.
- 13- In redox reactions, metals act as reducing agents and non-metals act as oxidizing agents.
- 14- Iron rusting is considered very slow reaction, while fireworks considered very fast reaction.
- 15- During the chemical reaction, concentration of reactants decreases, while concentration of products increases by passing time.
- 16- At the end of a complete chemical reaction, the concentration of reactants is zero %, while the concentration of the products is 100 %.
- 17- The nature of the reacting substances depends on kind of bonding and surface area.
- 18- Ionic compounds exist in form of ions in their solutions, while covalent compounds exist in form of molecules.

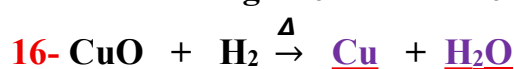
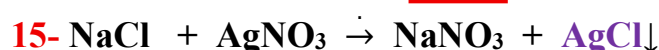
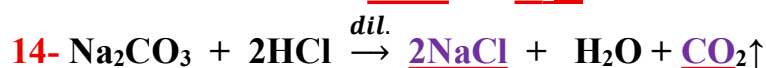
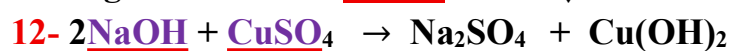
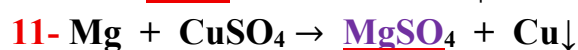
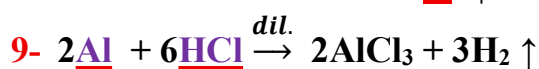
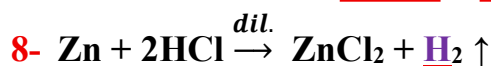
- 19- The combustion rate of aluminum wire in a laboratory with pure oxygen is faster (or more) than its combustion rate in atmospheric air.
- 20- Potatoes produce oxidase enzyme which increases the speed of decomposition of hydrogen peroxide solution.
- 21- Catalytic converter uses catalytic agents such as platinum, palladium or iridium.
- 22- Physical properties of the electric current include current intensity, potential difference and electric resistance.
- 23- Coulomb ÷ seconds = Ampere, which is the measuring unit of current intensity.
- 24- An electric charge of 10 coulombs passed in a time of 5 seconds in a conductor, so the current intensity is 2 Ampere.
- 25- The potential difference between the two poles of the electrical source in the open circuit (in the absence of an electric current) is called the electromotive force.
- 26- The voltmeter is connected to the electrical circuit in parallel.
- 27- Transmission of electric charges depends on the potential difference between two conductors, and it does not depend on amount of charge.
- 28- If the work exerted to transfer an electric charge of 20 coulombs between two points is equal to 60 joules, so the potential difference between the two points is equal to 3 volt.
- 29- The variable resistance (or sliding rheostat) used to control the current and thus control the potential difference.
- 30- joule x sec / coulomb² is the measuring unit of electric resistance.
- 31- Ohmmeter is used to measure the resistance value of a conductor directly, which is estimated in units of Ohm.
- 32- As the length of the wire increase, the resistance increases and the current intensity decreases.
- 33- The current intensity is inversely proportional to the resistance at constant potential difference.
- 34- Electricity can be obtained from two sources, which are electrochemical cells and electric generators (Dynamos).
- 35- An electric current is generated from the dynamo as a result of the conversion of mechanical (kinetic) energy into electric energy.
- 36- There are two types of electric current, which are direct electric current and alternating electric current.
- 37- Electrical cells produce a direct current, while generators produce alternating current.
- 38- Controllable artificial nuclear reactions are used for peaceful purposes, while the uncontrollable used for military purposes.

- 39- Nuclear radiation is used to eliminate pests and improve racess of some plants.
- 40- Sources of radioactive pollution are divided into two types which are natural sources and artificial sources.
- 41- Exposure to radiation in large doses destroys the bone marrow, spleen, digestive system and central nervous system.
- 42- Exposure to small radiation doses for several months leads to the appearance of physical, genetic and cellular effects.
- 43- Radioactive waste is buried completely away from the underground water stream and away from the areas exposed to earthquakes and volcanoes.
- 44- Hereditary traits are traits that are passed from one generation to the next.
- 45- Learning to swim is acquired trait, while blood group is hereditary trait.
- 46- Mendel removed the stamens of flowers during his experiments to prevent the occurrence of self-pollination, while he covered the stigmas of flowers after pollination to prevent the occurrence of cross-pollination.
- 47- In pea plants, the trait of the tall stem is a dominant trait, while the trait of wrinkled seed shape is a recessive trait.
- 48- Each hereditary trait is controlled by two hereditary factors which separate during the formation of gametes.
- 49- The two factors for a genetic trait are similar in the pure individual.
- 50- The living organism that carries an impure trait is called hybrid individual.
- 51- The dominant trait appears when the two factors of it are similar, or when one of the factors is dominant and the other is recessive.
- 52- If a crossing occurs between two individuals, both of which are hybrids, and this crossing produces 200 individuals, then the number of hybrid individuals produced is likely to be 100 individuals.
- 53- Mendel's second law is called the law of independent assortment of hereditary factors.
- 54- Narrow blue eyes are considered a recessive hereditary trait in humans.
- 55- The scientific idea of the dominance of curly hair over straight hair is the principle of complete dominance.
- 56- The chromosome is chemically consisting of a nucleic acid called DNA bind with protein.
- 57- The gene is considered a part of the DNA which consists of smaller structural units called nucleotides.
- 58- Carotene is converted in the body into vitamin (A) which a deficiency of it leads to malnutrition and losing sight.

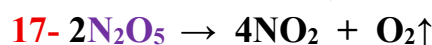
- 59- Carotene (pro-vitamin A) absent in ordinary rice while present in genetically modified rice.
- 60- The human genome project showed that more than 99 % of DNA is similar in humans.
- 61- Both nervous system and hormones work to regulate and coordinate the activities and functions of organs in the organism's body.
- 62- Below the brain, there is a small gland called pituitary gland, and in spite of its small size it is called the master gland or the main gland.
- 63- The gland responsible for regulating the amount of water in the body is pituitary gland.
- 64- When the secretion of the growth hormone decreases in childhood, man suffers from dwarfism.
- 65- The thyroid gland secretes calcitonin hormone and thyroxin hormone.
- 66- When the amount of iodine decreases in the food, the secretion of the thyroxin hormone decreases from thyroid gland.
- 67- When the amount of glucose sugar decreases in blood, pancreas secretes glucagon hormone.
- 68- The insulin hormone is secreted when the percentage of glucose sugar increases in the blood.
- 69- Diabetes disease is treated with insulin hormone, while the children of the limited growth are treated with growth hormone.
- 70- In humans, the testes secrete testosterone hormone, while the ovaries secrete estrogen and progesterone hormones.
- 71- The scientists managed to obtain large amounts of growth hormone by inserting human gene in the nucleic acid DNA of bacterial cells by using the technology of genetic engineering.

3) Complete the following equations:

- 1- $2\text{HgO} \xrightarrow{\Delta} 2\text{Hg} + \text{O}_2 \uparrow$
- 2- $2\text{NaNO}_3 \xrightarrow{\Delta} 2\text{NaNO}_2 + \text{O}_2 \uparrow$
- 3- $\text{Cu}(\text{OH})_2 \xrightarrow{\Delta} \text{CuO} + \text{H}_2\text{O} \uparrow$
- 4- $\text{CuCO}_3 \xrightarrow{\Delta} \text{CuO} + \text{CO}_2 \uparrow$
- 5- $\text{CuSO}_4 \xrightarrow{\Delta} \text{CuO} + \text{SO}_3 \uparrow$
- 6- $2\text{NaN}_3 \xrightarrow{\text{electric spark}} 2\text{Na} + 3\text{N}_2 \uparrow$



➤ In this reaction, the oxidizing agent is CuO while the reducing agent is H₂.



4) Write the scientific term of each of the following statements:

- 1- The process of breaking up bonds in the reactants molecules and formation of new bonds in the products molecules. (Chemical reaction)
- 2- A safety mean in the car that can be inflated in emergency situations. (Airbag)
- 3- The reaction of an acid and an alkali to give salt and water. (Neutralization reaction)
- 4- A chemical reaction in which one element replaces another element that is less active. (Simple substitution reactions)
- 5- A chemical reaction in which two compounds exchange radicals to form two new compounds. (Double substitution reactions)
- 6- A chemical process which causes the decrease in the oxygen content or the increase in the hydrogen content in a substance. (Reduction process)
- 7- A substance that gives oxygen or eliminates hydrogen. (Oxidizing agent)
- 8- The substance which loses an electron or more during a chemical reaction. (Reducing agent)
- 9- The change in the concentration of the reactants and resultants in a unit time. (The speed of chemical reaction)
- 10- A substance that changes the speed of the chemical reaction and does not change. (Catalyst)
- 11- Flow of negative electric charges through a conductor. (Electric current)
- 12- The amount of electrical charge flowing through a section of a conductor in one second. (Current intensity)

- 13- The electrical charge transmitted by a constant current of 1 amperes per second. (Coulomb)
- 14- The condition of an electric conductor which shows the transfer of electricity from or to it, when it is connected to another conductor. (Electric potential of a conductor)
- 15- A device used to measure the electromotive force. (Voltmeter)
- 16- A device used to raise or decrease the electrical voltage of home appliances. (Electric transformer)
- 17- The obstruction that the electric current receives as it passes through the conductors. (Electric resistance)
- 18- The resistance of a conductor when the potential difference between its two ends is 1 volt and a current of 1 amp passes through it. (Ohm)
- 19- The potential difference between the two ends of a conductor with a resistance of 1 ohm when a current of 1 amperes passes through it. (Volt)
- 20- The electric current produced from electrochemical cells (batteries). (D.C.)
- 21- The electric current which is used in electroplating process. (D.C.)
- 22- A type of connection of similar electric cells used to obtain high e.m.f. (Series connection)
- 23- The process of spontaneous decaying of atoms of some elements present in nature to reach a more stable composition. (Radioactivity phenomenon)
- 24- The radiation and nuclear energy emitted during nuclear reactions that can be controlled and carried out at nuclear reactors. (Artificial radioactivity)
- 25- A nuclear reactor exploded on April 26, 1986. (Chernobyl)
- 26- Science that researches the transmission of the hereditary traits from one generation to another. (Genetics)
- 27- The cells through which genetic factors are passed from parents to offspring. (Gametes)
- 28- The plant that Mendel used in his experiments. (Pea plant)
- 29- The gene which prevents the appearance of the effect of the other gene. (Dominant gene)
- 30- The trait that appears in all individuals of the first generation in Mendel's experiments. (Dominant trait)
- 31- The appearance of a genetic trait in individuals of the first generation when two individuals mate, each carrying a pure contrast genetic trait. (The principle of complete dominance)
- 32- The type of pollination that Mendel carried out on the pair of pure opposite traits in his experiments on pea plants. (Self-pollination)

- 33- It is chemically consists of a nucleic acid called DNA combined with n protein. (Chromosome)
- 34- The building unit of the nucleic acid DNA. (Nucleotide)
- 35- The substance formed by the gene and it is responsible for the occurrence of chemical reaction. (Enzyme)
- 36- The genetic map of the genes found in human chromosomes. (Human genome)
- 37- A chemical message that controls and regulates the activities and functions of most of the body organs. (Hormone)
- 38- Organs that secrete hormones directly into the bloodstream. (Endocrine glands)
- 39- They are the cells that the hormones affect. (Target cells)
- 40- The result when one of the endocrine glands does not act properly. (Hormone disorder)
- 41- Gland that secretes a hormone that regulates the body's overall growth. (Pituitary gland)
- 42- A hormone that contains iodine. (Thyroxin)
- 43- A hormone its secretion increases in emotion. (Adrenalin)
- 44- The hormone that causes the enlargement of thyroid gland when decreases. (Thyroxin)
- 45- The hormone which stimulates the release of glucose sugar from liver. (Glucagon)
- 46- The hormone responsible for the appearance of male secondary sex characters. (Testosterone)
- 47- The hormone responsible for the appearance of the female secondary sex characters. (Estrogen)

5) What is meant by...?

1- Chemical activity series.

- It is the arrangement of metals in a descending order according to the degree of their chemical activity.

2- The current intensity passing through a conductor in a circuit in 10 seconds is 2 ampere.

- This means that the quantity of electric charge that passes through the conductor in one second equals 20 coulomb.

3- The amount of charge flowing through a conductive cross section per second equals 50 coulombs.

- This means that the electric current intensity passing through a conductive cross section equals 50 ampere.

4- The potential difference between two ends of a conductor is 5 Volt.

- This means that the work done to transfer one coulomb between two ends of this conductor is 5 joule.

5- Electromotive force of a battery is 12 Volt.

- This means that the potential difference between the two poles of the battery when the electric circuit is open is 12 Volt.

6- The work done to transfer a quantity of 20 coulombs between the two ends of a conductor is equal to 4400 joules.

- This means that the potential difference across the two ends equals 220 Volt.

7- Conductor resistance is 100 ohm.

- This means that the ratio between the potential difference across the two ends of the conductor and the current intensity passing through it is 100 ohm.

8- Ohm's law.

- The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature.

9- Radioactive Elements.

- They are elements whose atoms' nuclei contain a number of neutrons more than the number required for its stability.

10- Radiation pollution.

- The increase in the amount of radiation in the environment.

11- Pure Individual.

- The individual carries a similar pair of genes either dominant genes or recessive genes, so the pure dominant trait or the recessive trait appears on the individual.

12- Mendel's First Law (Law of segregation of factors).

- When two pure individuals of any one pair of hereditary traits are different from each other, only the dominant trait appears in the first generation, while the two traits appear in the second generation at a ratio of 3 (dominant trait) : 1 (recessive trait).

13- Genes.

- They are parts of DNA present on the chromosomes and they are responsible for appearing the individual's hereditary traits.

14- Hormone disorder.

- It is the increase or decrease in the secretion of the hormones, due to abnormal working of the endocrine glands.

6) Mention the importance of:

- 1- **Airbags:** one of the most important safety methods in modern cars at emergencies.
- 2- **Catalytic converter:** a metallic can exists in most modern cars to treat the harmful gases emitted from the fuel combustion in engine.
- 3- **Iridium (platinum or palladium):** one of catalytic metals used in catalytic converter to treat harmful gases emitted from the car engine.
- 4- **Manganese dioxide:** is a positive catalyst that increases the speed of decomposition of hydrogen peroxide into water and oxygen gas.
- 5- **Enzymes:** chemical substances produced by the body of a living organism, act as catalysts that increase the speed of biological reactions by thousands or even by millions times.
- 6- **Ohmmeter:** a device used for measuring the electric resistance.
- 7- **The dynamo (generator):** It produces alternating current by converting the kinetic energy into electric energy.
- 8- **Electric transformer:** decrease the electric potential to protect the electric devices from damage.
- 9- **Nuclear binding energy:** bind the nucleus components together and overcome the repulsion forces between positively charged protons.
- 10- **Gloves and clothes which the radiologists wear in hospitals:** protect them from radiation pollution.
- 11- **Nucleic Acid DNA:** carries the hereditary traits of the living organism.
- 12- **Human genome project:**
 - Determination of all the human genes and identification their various functions.
 - Identification of the genes responsible for the various diseases like cancer, diabetes, vascular diseases and mental diseases.
 - Determination of the effect of various mutations on the function of the genes.
 - Understanding the human biology and identify the single differences between one person and another.
- 13- **Genetically modified rice:** Solving the problem of malnutrition caused by deficiency of vitamin (A).
- 14- **Growth hormone:** it promotes the growth of the body as a whole, where it controls the speed of growth rate of the muscles, bones and other organs.

7) Put (✓) or (X) in front of the following statements:

- 1- When sodium nitrate is heated, the oxygen gas rises up. (✓)
- 2- Hydrochloric acid reacts with sodium carbonate and produces a gas that turbid clear lime water. (✓)

- 3- Copper replaces magnesium in its salt solutions. (X)
- 4- When hydrochloric acid is added to copper turning, no reaction occurs. (✓)
- 5- Copper replaces gold in its salt solutions, while the opposite doesn't occur. (✓)
- 6- Oxidation and reduction reactions occur separately. (X)
- 7- Oxidation is a chemical process in which an atom gains one or more electrons. (X)
- 8- A chlorine atom converts to chloride ion when it loses its valence electron. (X)
- 9- The conversion of Fe^{+3} to Fe^{+2} is considered a reduction process. (✓)
- 10- The reaction of iron rusting is very slow reaction because it occurs in very short time. (X)
- 11- Some chemical reactions take several months to occur, such as the reaction of oil formation inside the Earth. (X)
- 12- The medicines are considered from the examples of the chemical reactions products. (✓)
- 13- The reactions of ionic compounds are slower than that of covalent compounds. (X)
- 14- The speed of chemical reactions decreases with increasing temperature. (X)
- 15- The dissolving speed of an effervescent tablet in a certain volume of cold water is less than a similar tablet of the same volume in hot water. (✓)
- 16- When 5 gram of catalytic agent is used in a chemical reaction, its mass after the end of the chemical reaction is less than 5 g. (X)
- 17- The catalyst changes the speed of the chemical reaction without affecting beginning or stopping of the reaction. (✓)
- 18- When manganese dioxide powder is added to a hydrogen peroxide solution, the amount of manganese dioxide increases. (X)
- 19- Ohm = Coulomb x Volt. (X)
- 20- If work of 120 joules is done to transfer a quantity of charge of 60 coulombs so the potential difference is equal to 2 volt. (✓)
- 21- If the electric potential of a conductor (x) is greater than of a conductor (y), so the current flows through the conductor (x) to the conductor (y). (✓)
- 22- The direct current can be transferred for long distances. (X)
- 23- The alternating current can be converted into a direct current. (✓)
- 24- The e.m.f of several cells which are connected in series is equal to the e.m.f of one cell. (X)
- 25- The radioactive elements are unstable due to its excess nuclear energy. (✓)
- 26- Selenium is one of the radioactive elements. (✓)
- 27- Alpha, beta, and gamma radiation are considered visible radiation. (X)

- 28- Dr. Ali Mostafa Mosharafa had important theories in the field of atoms and radiation and the atomic bomb industry is based on them. (✓)
- 29- Nuclear energy is used in the field of Space exploration. (✓)
- 30- The nuclear energy is used in medical field in diagnose and treatment of some diseases. (✓)
- 31- The limit of the safe dose of nuclear radiation differs according to the age of the person. (✓)
- 32- The dominant trait is the trait which completely disappears in the first generation. (X)
- 33- Individuals that inherit at least one gene for the dominant trait from one parent will inherit the dominant trait. (✓)
- 34- One of the dominant traits of pea plants is the swollen pod. (✓)
- 35- If the result of a cross between two parents is 50% dominant and 50% recessive, this means that both parents have a pure trait. (X)
- 36- When a pure short stem pea plant is pollinated with a hybrid long stem one, all the produced plants are short stem. (X)
- 37- Children can be born with freckles in face even their parents do not have. (✓)
- 38- Mendel's second law is known as the law of segregation of factors. (X)
- 39- The free ear lobe is a dominant trait. (✓)
- 40- The presence of freckles in the face is from recessive traits in the human. (✓)
- 41- A genetic trait will change if a change in the order of the gene's nucleotides responsible for this trait occurs. (✓)
- 42- The endocrine glands secrete more than 500 hormones in the human body. (X)
- 43- Endocrine glands secrete their hormones into the bloodstream through special duct. (X)
- 44- Pituitary gland is located below the pancreas. (X)
- 45- Exophthalmic goiter has resulted due to thyroxine hormone deficiency. (X)

8) Correct the underlined words:

- 1- Most of the metal carbonates decompose into carbon dioxide and metal. (metal oxide)
- 2- When sodium reacts with chlorine, sodium undergoes reduction process. (oxidation)
- 3- At the beginning of a chemical reaction, the concentration of product is 100 %. (zero)
- 4- The measuring unit of the concentration of the products from chemical reaction is gram/second. (mole/liter)

- 5- The time required to complete ionic compound reactions is equal to the time required to complete covalent compound reactions under the same reaction conditions. (less than)
- 6- The difference between the mass of manganese dioxide and its mass after ending the chemical reaction of decomposition of hydrogen peroxide equals whole one. (zero)
- 7- Nitrogen pentoxide gas decomposes into nitrogen and oxygen gas.(nitrogen dioxide)
- 8- The reaction of silver nitrate solution with sodium chloride solution is a slow reaction. (fast)
- 9- Amylase enzyme found in sweet potato. (Oxidase)
- 10- Electric resistance is the work done to transfer a quantity of charge of one coulomb between the two poles of a conductor. (Potential difference)
- 11- Quantity of electric charge is measured in Ohm unit. (Coulomb)
- 12- To transfer an electric charge of 10 coulomb between two points with potential difference of 20 volts, a work of 2 joule is required. (200)
- 13- Coulomb = Ampere x Volt. (Second)
- 14- The ampere is the potential difference between the two ends of a conductor when 1 joule is applied to transfer a quantity of 1 coulomb between the two ends of this conductor. (volt)
- 15- Ammeter is connected in the electrical circuit in parallel. (series)
- 16- Joule is the unit of measurement of electric charge. (work)
- 17- Ohm is equivalent to joules / amperes. Seconds (Volt)
- 18- Sliding rheostat device controls the value of the resistance by controlling the mass of the metallic wire coil. (length)
- 19- The electromotive force of a battery whose cells are connected in series is equal to that one whose cells are connected in parallel. (greater than)
- 20- Ohm detects the emission of invisible rays from the element uranium that has the ability to penetrate through solids. (Henri Becquerel)
- 21- In the industrial field the nuclear energy is used to convert glass into silicon chips. (sand)
- 22- The radiologist should not be exposed to radiation in amounts more than 5 Sievert per year. (20 milli Sievert)
- 23- Millisievert = 10^3 Sievert. (10^{-3})
- 24- The changes that take place to the living organism due to its exposure to radiations are from genetic effects of radiation pollution. (physical)
- 25- The ability to write is a hereditary trait. (acquired)
- 26- The recessive trait is always impure. (pure)

- 27- Mendel chose 10 traits in pea plant to conduct his experiments. (7)
- 28- When a male and a female with a same genotype (Bb), the percentage of the offspring which has (BB) as a gene type is 75%. (25%)
- 29- The genetic structure (aaBb) gives 3 types of gametes. (2 types)
- 30- The genetic structure of wrinkled yellow coloured seeds of a pea plant is yySS. (YYss)
- 31- In pea plants, the green color of the seed dominates over the yellow color. (pod)
- 32- A female fruit fly with short wings crossed with a male with long wings. All of the resulting flies had long wings. Two of these offspring crossing with each other so the percentage of their offspring with long wings in the second generation was 50%. (75 %)
- 33- On pollination of two pea plants with each other, the genetic structure for each of them (Aa), so the ratio between the resulting offspring which carry the genotype (AA) to the total number of offspring is 1:3. (1:4)
- 34- Genes are parts of DNA found in the cytoplasm of the cell. (nucleus)
- 35- Adrenal gland secretes a hormone activates the thyroid gland. (Pituitary)
- 36- To protect thyroid gland from enlargement, we eat food with a balanced ratio of calcium. (iodine)
- 37- Glucagon hormone is secreted by the two ovaries. (pancreas)
- 38- The hormone that promotes the growth of the endometrium is the estrogen hormone. (progesterone)

9) Compare between ...?

- 1- Oxidation and reduction processes concerning traditional concept and electronic concept.

P.O.C.	Oxidation processes	Reduction processes
Traditional concept	A chemical process which causes the increase in the oxygen percentage or the decrease in the hydrogen percentage in a substance.	A chemical process which causes the decrease in the oxygen percentage or the increase in the hydrogen percentage in a substance.
Electronic concept	A chemical process where the atom loses an electron or more.	A chemical process where the atom gains an electron or more.

2- The oxidizing agent and the reducing agent according to the electronic concept.

Oxidizing agent	Reducing agent
It is the substance which gains electron or more during chemical reaction.	It is the substance which loses an electron or more during a chemical reaction.

3- Positive catalytic reactions and negative catalytic reactions.

Positive catalytic reactions	Negative catalytic reactions
They are chemical reactions in which the catalyst increases their speeds.	They are chemical reactions in which the catalyst decreases their speeds.

4- Ammeter and voltmeter.

P.O.C.	Ammeter	Voltmeter
Uses	It is a device used to measure the electric current intensity passing through the circuit.	It is a device used to measure the potential difference between two ends of a conductor.
Way of connection	It is connected in the electric circuits in series.	It is connected in the electric circuits in parallel.

5- The direct current and the alternating current, in view of the field of using.

Direct electric current (D.C.)	Alternating electric current (A.C.)
It is used in electroplating processes and operating some electric appliances.	It is used in lighting houses and streets and operating electric appliances.

6- The hereditary traits and the acquired traits.

Hereditary traits	Acquired traits
They are the traits that are transmitted from one generation to another.	They are the traits that aren't transmitted from one generation to another.
Ex. Hair colour.	Ex. skill of playing football.

7- The dominant trait and the recessive trait.

Dominant trait	Recessive trait
The trait that appears due to aggregation of two genes of the dominant trait or one gene of the dominant trait with a gene of the recessive trait.	The trait that appears due to aggregation of two similar genes of the recessive trait.

8- Pure individual and hybrid individual.

Pure individual	Hybrid individual
The individual that carries a similar pair of genes either dominant genes or recessive genes, so the pure dominant trait or the recessive trait appears on the individual.	The individual that carries a different pair of genes, one is dominant and the other is recessive, so the dominant gene dominates over the recessive gene and the impure dominant trait appears on the individual.

9- Dwarfism and gigantism in human being.

Dwarfism	Gigantism
The body stops growing as a result of decreasing the secretion of the growth hormone at childhood.	The limb's bones continue growing as a result of increasing the secretion of the growth hormone at childhood.

10) Give reason for each of the following:

1- Chemical reactions are very important in our daily lives.

- Because they can be used in manufacturing medicines, fertilizers and artificial fibers.

2- When a quantity of mercury oxide is heated, its mass decreases and its color changes.

- Due to decomposition of red mercuric oxide by heat into silvery precipitate of mercury (color changes) and oxygen gas evolves (mass decreases).

3- A black substance forms when a quantity of green copper carbonate is heated.

- Due to decomposition of green copper carbonate by heat into black copper oxide and carbon dioxide gas evolves.



4- A black color appears when heating a quantity of blue copper sulphate.

- Due to decomposition of blue copper sulphate by heat into black copper oxide and sulphur trioxide gas evolves.



5- Sodium nitrate color changes to yellowish white when heated.

- Due to decomposition of white sodium nitrate by heat into yellowish white sodium nitrite and oxygen gas evolves.



6- Do not extinguish sodium fires with water.

- Because sodium comes before hydrogen in C.A.S., so it can substitute hydrogen of water and hydrogen gas evolves which burns with a pop sound.

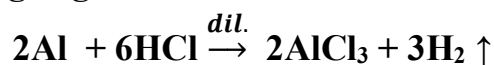


7- Gold does not react with acids.

- Because gold comes after hydrogen in the chemical activity series, so it can't replace the hydrogen of acid.

8- Gas bubbles rise when a piece of aluminum is added to hydrochloric acid.

- Because aluminium comes before hydrogen in C.A.S., so it can substitute hydrogen of diluted acid and hydrogen gas evolves.



9- The reaction of aluminum with hydrochloric acid is vigorous than the reaction of zinc with hydrochloric acid.

- Because aluminium is more active than zinc, as it comes before zinc in C.A.S.

10- Silver nitrate solution should not be stored in aluminum containers.

- Because aluminium comes before silver in the chemical activity series, so it substitutes silver in silver nitrate solution which leads to eroding of aluminium containers.

11- Oxidation and reduction are concurrent processes.

- Because the number of gained electrons in reduction process equals the number of lost electrons in oxidation process.

12- The reaction of sodium with chlorine involves oxidation in spite absence of oxygen.

- Because this reaction occurs by losing and gaining electrons.

13- Metals act as reducing agents and non-metals act as oxidizing agents.

- Because metals tend to lose electrons during the chemical reaction, while nonmetals tend to gain electrons.

14- Chemical reactions between ionic compounds faster than between covalent compounds.

- Because the reactions of ionic compounds take place between ions, while the reactions of covalent compounds take place between molecules.

15- The reaction of sodium chloride with hydrochloric acid is a fast reaction.

- Because it takes place between the ions produced from dissociation of each of them in water.

16- The reaction rate of HCl with iron filings is faster than its reaction with a piece of iron of the same mass.

- Because the surface area of iron filings is larger than the surface area of the iron piece and the speed of chemical reaction increases by increasing the surface area.

17- It is preferable to use divided nickel in the hydrogenation of oils.

- Because the speed of chemical reactions increases by increasing the surface area.

18- The speed of a chemical reaction increases with increasing concentration of the reactants.(The speed of a chemical reaction increases with increasing temperature.)

- Because the number of probable collisions between the reactants molecules increases.

- 19- Food is stored in the refrigerator for a long time.
- Because the low temperature in the fridge slows down the speed of the chemical reactions done by bacteria which cause the rot of food.
- 20- A catalyst is used in some chemical reactions.
- To increase the rate of chemical reactions.
- 21- Adding pieces of potato to a hydrogen peroxide solution increases the speed of the chemical reaction.
- Because the oxidase enzyme in sweet potato acts as a catalyst.
- 22- Ammeter is connected to the electrical circuit in series.
- To measure the electric current intensity passing through the circuit.
- 23- Transmission of electrical charges from one charged conductor to another charged conductor.
- Due to the difference in their potential.
- 24- The electric current does not transfer from the conductor with an electrical voltage of 20 volts to another of voltage 30 volts.
- Because the electric current flows only from conductor of higher potential to conductor of lower potential.
- 25- There is no electric current flow when two charged conductors with the same voltage are connected.
- Because there is no potential difference between them (potential difference = zero).
- 26- The voltmeter is connected to both ends of the electrical circuit.
- To measure the potential difference across the two ends of the electrical circuit.
- 27- The voltmeter is connected between the two ends of the electrical source (battery).
- To measure the electromotive force of the battery.
- 28- To charge the mobile phone, it is necessary to use an electrical adapter (charger).
- To reduce the electric potential of the current and get a suitable electric potential to prevent their damage.
- 29- Use of rheostats in some electrical circuits.
- To control the current intensity flowing through the circuit and the potential difference in the different parts of the circuit.
- 30- Increased conductor resistance by increasing wire length.
- Because the resistance of a conductor is directly proportional to its length.
- 31- The electrochemical cell is considered a source of electrical energy.
- (Naming electrochemical cells by this name.)
- Because it converts chemical energy into electric energy.
- 32- Electric generators are used in power plants.
- Because they convert the mechanical (kinetic) energy into electric energy.

33- The current used in lighting houses is known as alternating current.

- Because it has a variable intensity and flows in two opposite directions in the electric circuits.

34- The alternating current (A.C.) is preferred than the direct current (D.C.).

- Because it can be transferred for long distances through wires and can be changed into a direct current.

35- DC is represented by a straight line parallel to the horizontal axis.

- Because it has a constant intensity.

36- Some cells are connected in the electric circuit in series.

- To obtain a battery of high e.m.f.

37- Some cells are connected in the electric circuit in parallel.

- To obtain a battery of low e.m.f.

38- The connected cells of a battery in parallel work as one cell.

- Because the total e.m.f equals the e.m.f of one cell.

39- The atom's nucleus is considered as an energy store.

- Because the nuclear binding forces that are originated inside the nucleus are considered as the source which provides the atom with a huge nuclear energy.

40- Some elements are called radioactive elements.

(Uranium is one of the radioactive elements.)

- Because their nucleus contains a number of neutrons more than the number required for stability which causes the presence of excess energy emitted in a form of invisible (unseen) radiation.

41- The radioactive waste should be buried far from the underground water streams.

- To prevent its pollution.

42- Radiation pollution may occur in the areas where nuclear explosions don't occur.

- Because the radiation pollution can be transferred by wind or by falling of rains.

43- Learn to walk in children is not considered a genetic trait.

- Because it is acquired trait that can't be transmitted from a generation to another.

44- The recessive trait is always pure.

- Because it appears only when the two genes of recessive trait aggregate.

45- Mendel is considered the founder of genetics.

- Because the scientific studies of heredity started with Mendel's experiments on pea plant.

46- Mendel chose the pea plant to conduct his experiments.

- It is easy to be planted and it grows fast.
- Its life cycle is short.
- Its flowers are hermaphrodite, so it can be self-pollinated.

- It can easily be artificially pollinated (human intervention).
 - It produces large numbers of plants in a generation.
 - It has several pairs of easily recognized contrasting traits.
- 47- Mendel let the pea plants self-pollinate for several generations.
- To be sure of the purity of the trait.
- 48- Mendel's first law is known as the law of segregation of factors.
- Because the two factors of the trait segregate from each other during the formation of gametes.
- 49- When a pure yellow pod pea plant is pollinated with a pure green pod pea plant, they produce plants all are of green pods.
- Because the green pod trait dominates over the yellow pod trait in the pea plant according to the principle of complete dominance.
- 50- Resulted individuals with a ratio of 1:1 may be produced on crossing dominant trait with a recessive trait.
- Because the dominant trait is impure.
- 51- The ability of rolling the tongue is a dominant trait in the human being.
- Because the gene of this trait is a dominant gene that dominates over the recessive gene if they are both present together in an individual.
- 52- Hereditary information is found in DNA.
- Because DNA consists of genes which are responsible for appearance of the genetic traits of the living organism.
- 53- The efforts of Watson and Crick have a significant role at the developing of genetics.
- Because they make a model of the DNA molecule composed of two strands coiled around each other forming a double helix shape.
- 54- The blood is the only way by which the hormone reaches its location.
- Because the target cells that are affected by hormone are almost located a way from the endocrine gland that secretes the hormone.
- 55- Pituitary gland is called the master gland.
- Because it secretes hormones that regulate the activities of most other endocrine glands.
- 56- The height of some persons may reach 2 meters.
- Due to the increase in the secretion of the growth hormone at childhood.
- 57- The height of some persons may reach less than half metre.
- Due to the decrease in the secretion of the growth hormone at childhood.

58- Thyroid gland plays an important role in controlling the level of calcium in the blood.

- Because it secretes calcitonin hormone which controls the level of calcium in the blood.

59- The two adrenal glands have an important role when man is exposed to emergency.

- Because they secrete the adrenalin hormone that stimulates the human body to respond to emergencies.

60- Pancreas is a double function gland.

- Because it secretes insulin and glucagon hormones and the function of insulin hormone contradicts the function of glucagon hormone.

61- The reproductive glands are important during puberty (in teenagers).

- Because they secrete hormones which are responsible for the appearance of the male and female secondary sex characters.

11) What happened in each of the following cases:

1- Heating a quantity of red mercury oxide.

- Thermal decomposition of red mercuric oxide into silvery precipitate of mercury and oxygen gas evolves.



2- Bringing a burning splint close to the gas produced by the thermal decomposition of HgO.

- The produced oxygen gas increases the glow of the burning splint.

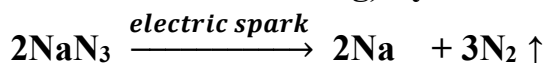
3- Heating a quantity of blue copper hydroxide.

- Thermal decomposition of blue copper hydroxide into black copper oxide and water.



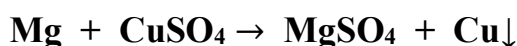
4- A rapid and sudden decrease in the speed of modern cars.

- Air bag gets inflated by nitrogen gas at an extreme speed due to decomposition of sodium azide (which is present inside the air bag) by electric spark.



5- Placing a piece of magnesium ribbon in a solution of blue copper sulphate.

- The blue colour of copper sulphate disappears and a red precipitate of copper is formed.



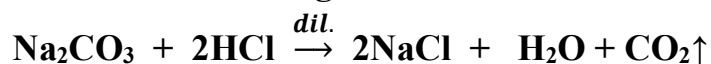
6- Place a very small piece of sodium in water.

- An ignition occurs accompanied by a strong pop sound.



7- Adding sodium carbonate salt to diluted hydrochloric acid.

- An effervescence occurs due to evolving bubbles of carbon dioxide gas.



8- Adding hydrochloric acid to a quantity of copper turning.

- No reaction occurs.

9- Adding acid to alkali.

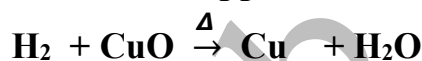
- Formation of salt and water.

10- Replacing hydrogen of acid with a metal.

- Salt of the acid is formed and hydrogen gas evolves.

11- Passing hydrogen gas over hot copper oxide.

- Hydrogen is oxidized into water, while copper oxide is reduced into copper.



12- Oil reacting with caustic soda.

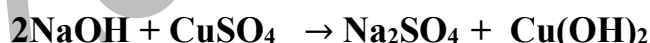
- Soap is formed.

13- Reaching the concentration of the reactants in a chemical reaction to zero.

- The reaction stops.

14- Adding sodium hydroxide solution to copper sulphate solution.

- The blue colour of copper sulphate disappears and blue precipitate of copper hydroxide is formed.



15- Replacing iron filings with a piece of iron of the same mass when reacting with dil. hydrochloric acid.

- The speed of the chemical reaction decreases.

16- Replacing diluted HCl with concentrated acid when it reacts with magnesium strip.

- The speed of the chemical reaction increases.

17- The temperature of the reaction increases.

(Increasing the surface area of the reactants.)

- The speed of chemical reaction increases.

18- Dispersing the reactants used in any chemical reaction.

- The surface area of the reactants increases and the speed of chemical reaction increases.

19- Adding small amount of manganese dioxide to hydrogen peroxide.

- The decomposition rate of hydrogen peroxide into water and oxygen increases.

20- Absence or weakness of the strong attraction in the atom between the nucleus and the valence electrons.

- The valence electrons become free.

21- Increasing the amount of electrical charge passing through a cross section of a conductor per second.

- The electric current intensity will increase.

22- Increasing the flow of the electric charge to double at the same time.

(In relation to the intensity of the electric current)

- The electric current intensity increases to double.

23- Increasing the amount of electricity to double and reducing its flow time by half.

(In relation to the intensity of the current)

- The electric current intensity increases 4 times its value.

24- Two charged conductors came into contact and the voltage of the first conductor was greater than the voltage of the second conductor.

- The electric current will flow from the conductor that has the higher electric potential to the other.

25- Connecting two conductors with the same voltage by a wire.

- No electric current will pass through them (Potential difference = zero).

26- Increasing the number of electric cells connected in series.

(Relative to the electromotive force)

- The total e.m.f increases.

27- Increasing the number of electric cells connected in parallel.

(Connecting similar poles together for three electrical cells.)

(Relative to the electromotive force)

- The total e.m.f equals the e.m.f of one cell.

28- Exposing a man for a large dosage of atomic radiation for a short period of time.

- Lead to the damage of bone marrow, spleen, digestive system and central nervous system.

29- Decreasing the number of red blood cells in the human body.

- This lead to feeling sick and having a sore throat accompanied by nausea, vertigo and diarrhea.

30- Exposing red blood cells to small dosage of radiation for a long time.

- It changes the chemical composition of the hemoglobin which makes it incapable of carrying oxygen.

- 31- A dominant gene for one of the traits is present with another for the same characteristic. (A dominant gene exists with a recessive one.)
- The dominant trait appears.
- 32- A person obtains a recessive gene from both parents.
- The recessive trait appears.
- 33- Mating between two pure individuals different in two pairs or more of contrasting traits.
- The trait of each pair is inherited independently of the others and all individuals of the first generation appear carrying the dominant traits only while in the second generation the dominant trait and the recessive trait appear at a ratio of 3: 1.
- 34- Male with straight hair and narrow eye married with female of pure curly hair and pure wide eyes.
- All the resulted offspring (100%) are of hybrid curly hair and hybrid wide eyes.
- 35- The gene cannot produce its specific enzyme.
- No reaction occurs, so the protein showing a specific hereditary trait will not be formed.
- 36- Dependence on rice as a main food.
- Deficiency in vitamin (A) which may lead to loss of sight.
- 37- Deficiency of growth hormone secretion at childhood.
- The body stops growing and the person becomes a dwarf.
- 38- The secretion of growth hormone is increased at childhood.
- The limb's bones continue growing and the person becomes a giant.
- 39- Thyroxin hormone secretion increases.
- The human will suffer from exophthalmic goiter.
- 40- Man takes a little amount of iodine in his food.
- The deficiency of thyroxin hormone secretion and human suffers from simple goiter.
- 41- A person is exposed to a frightening situation.
- Pituitary gland secretes adrenal glands activating hormone that stimulates adrenal glands to secrete adrenalin hormone to respond to emergencies.
- 42- Glucose sugar level increased in blood.
- Pancreas secretes insulin hormone to reduce the percentage of glucose in blood.
- 43- Pancreas decreases its secretion of the insulin hormone.
- Human will suffer from diabetes disease.
- 44- Pancreas does not secrete glucagon hormone.
- The level of glucose sugar in blood decreases.

12) Problems:

- 1- Calculate the intensity of the electric current generated by the passage of a quantity of electricity of 6000 coulomb in a cross section of a conductor in 5 minutes.

$$I = \frac{q}{t} = \frac{6000}{5 \times 60} = 20 \text{ amp.}$$

- 2- Calculate the amount of electrical charges passing through the filament of a lightbulb in a time of 0.4 seconds if you know that the current passing through it is 3 ampere.

$$q = I \times t = 3 \times 0.4 = 1.2 \text{ coulomb.}$$

- 3- Calculate the passage time of a quantity of 25 coulomb if you know that the intensity of the electric current is 10 ampere.

$$t = \frac{q}{I} = \frac{25}{10} = 2.5 \text{ seconds.}$$

- 4- If the work done to transfer a quantity of charge through a conductor equals 150 joule and potential difference across its terminals is 2.5 volt. Calculate the electric current intensity which passes in time equals 2 minutes in this conductor.

$$q = \frac{W}{V} = \frac{150}{2.5} = 60 \text{ coulomb.}$$

$$I = \frac{q}{t} = \frac{60}{2 \times 60} = 0.5 \text{ amp.}$$

- 5- If the amount of work done to transfer an electric charge of 30 coulomb between two points is equal to 33000 joule, calculate the potential difference between the two points.

$$V = \frac{W}{q} = \frac{33000}{30} = 1100 \text{ volt.}$$

- 6- Calculate the work done to transfer an electrical charge of 5 coulomb through a conductor if the potential difference between the two ends of the conductor is 3 volt.

$$W = V \times q = 3 \times 5 = 15 \text{ joule.}$$

- 7- If the potential difference between two ends of an electrical source is 100 volt, calculate the amount of electricity transmitted when that power source exerts a work of 200 joule.

$$q = \frac{W}{V} = \frac{200}{100} = 2 \text{ coulomb.}$$

- 8- If the amount of work done to transfer an electric charge of 480 coulomb between two points in a time of two minutes is equal to 960 joule, calculate the intensity of the electric current and the potential difference between the two points.

$$I = \frac{q}{t} = \frac{480}{2 \times 60} = 4 \text{ amp.}$$

$$V = \frac{W}{q} = \frac{960}{480} = 2 \text{ volt.}$$

- 9- Calculate the current intensity, if the potential difference between the two ends of a conductor 5 volt when a work of 200 joule is done to transfer a quantity of electricity passing through a cross section of the conductor in a time of 2 seconds.

$$q = \frac{W}{V} = \frac{200}{5} = 40 \text{ coulomb.}$$

$$I = \frac{q}{t} = \frac{40}{2} = 20 \text{ amp.}$$

- 10- Calculate the current intensity in a 20 ohm resistor electrical device when the potential difference between the two ends is 220 volts.

$$I = \frac{V}{R} = \frac{220}{20} = 11 \text{ amp.}$$

- 11- If the potential difference between the two ends of an electrical source is 240 volt and the current intensity is 8 ampere, what is the electric current intensity if it is connected to an electrical source with a potential difference of 220 volt?

$$R = \frac{V}{I} = \frac{240}{8} = 30 \text{ Ohm.}$$

$$I = \frac{V}{R} = \frac{220}{30} = 7.3 \text{ amp.}$$

- 12- Calculate the amount of electricity passing through a 220 ohm resistor for two minutes when connected to a 220 volt battery.

$$I = \frac{V}{R} = \frac{220}{220} = 1 \text{ amp.}$$

$$q = I \times t = 1 \times 2 \times 60 = 120 \text{ coulomb.}$$

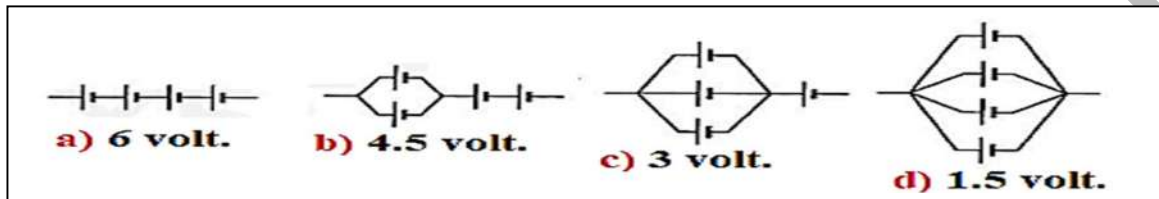
- 13- If a work of 200 joule is required to transfer a quantity of 40 coulomb through a 10 ohms resistor wire, calculate the intensity of the current in the wire.

$$V = \frac{W}{q} = \frac{200}{40} = 5 \text{ volt.}$$

$$I = \frac{V}{R} = \frac{5}{10} = 0.5 \text{ amp.}$$

14- Illustrate in the diagram how to connect four electric cells to obtain a battery with the following electromotive force values (e.m.f for one cell= 1.5 volt):

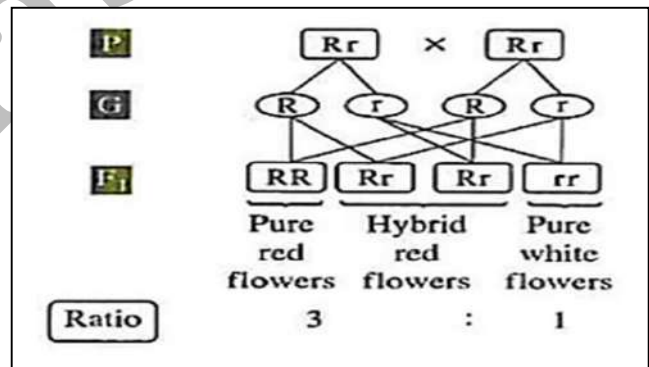
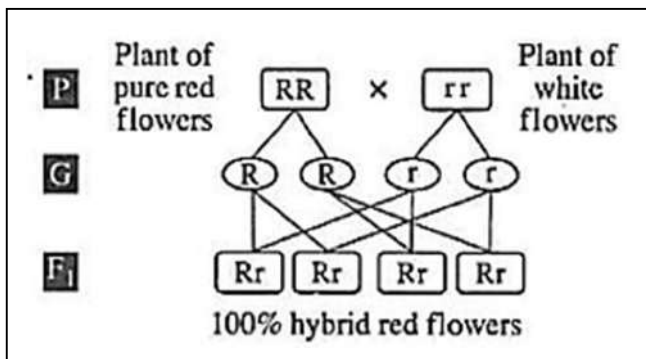
- a) 6 volt. b) 4.5 volt. c) 3 volt. d) 1.5 volt.



13) Explain on genetic bases the result of crossing:

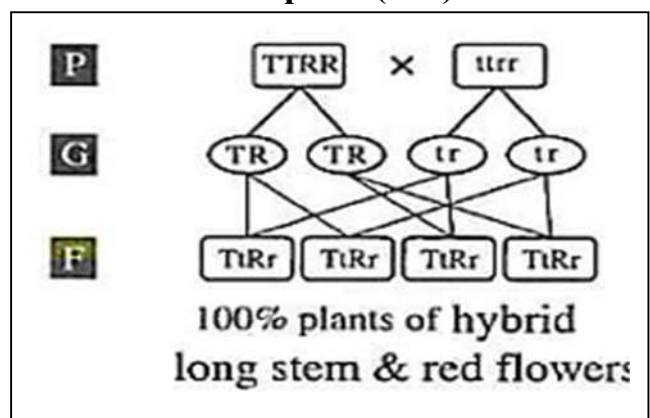
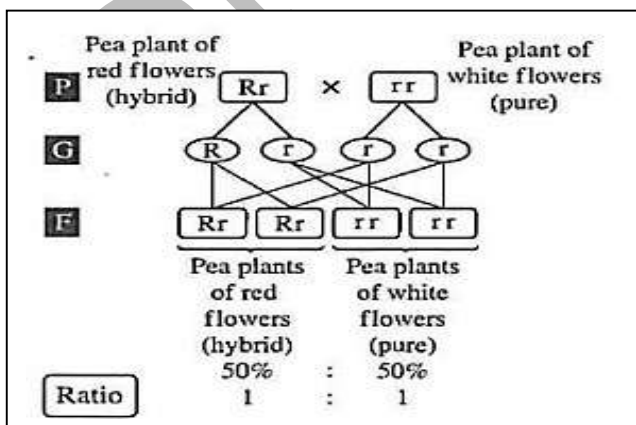
- 2- A pea plant with pure white flower and another with pure red flowers.

- 1- Two pea plants that both have hybrids red flowers.



- 4- A pea plant with white flower and another with hybrid red flowers.

- 3- A tall-stemmed, red flowered pea plant (TTRR) and a short-stemmed, white flowered plant (ttrr).



14) Study the opposite figures then answer:

1- The opposite graph illustrates the change in concentration of reactants and resultants in respect to time.

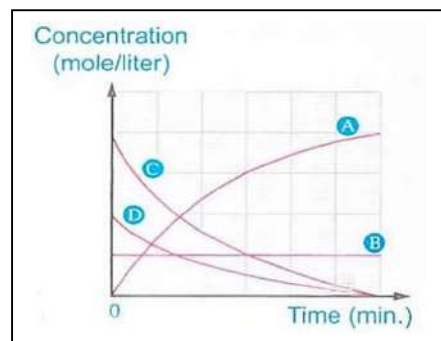
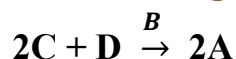
a) Write the letter(s) which indicate(s) the following:

Reactants: C, D.

Resultants: A.

Catalyst: B.

b) Write the balanced equation that indicates this graph.



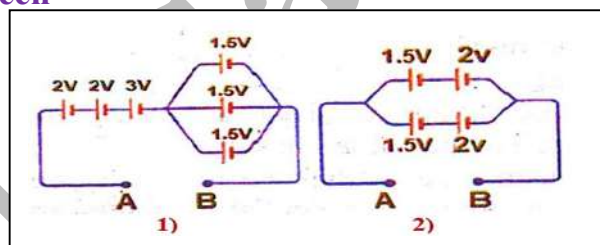
2- Calculate the total electromotive force between A and B in:

a) Figure (1).

Total e.m.f. = $2 + 2 + 3 + 1.5 = 8.5$ volt.

b) Figure (2).

Total e.m.f. = $1.5 + 2 = 3.5$ volt.



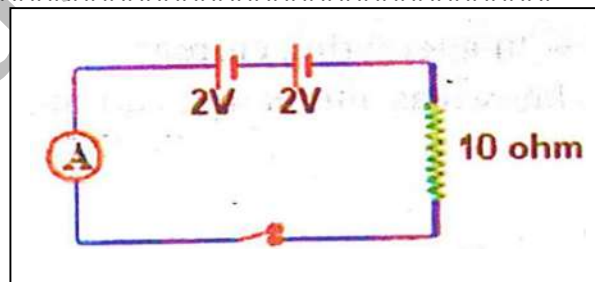
3- In the opposite figure find:

a) The e.m.f of the battery.

e.m.f. = $2 + 2 = 4$ volt.

b) The reading of ammeter.

$$I = \frac{V}{R} = \frac{4}{10} = 0.4 \text{ amp.}$$



4- In the opposite electric circuit, Calculate:

a) Reading of the ammeter.

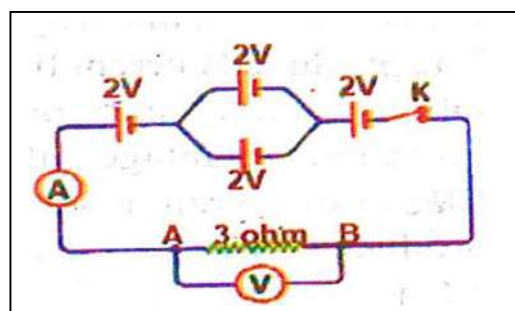
e.m.f. = $2 + 2 + 2 = 6$ volt.

$$I = \frac{V}{R} = \frac{6}{3} = 2 \text{ amp.}$$

b) Amount of work done to transfer quantity of electricity between two points A & B through 5 minutes.

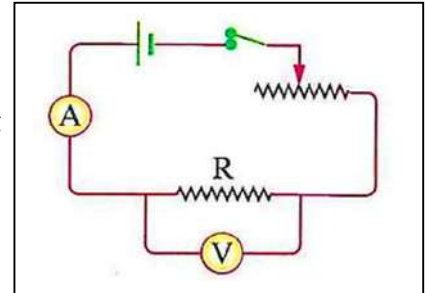
$$q = I \times t = 2 \times 5 \times 60 = 600 \text{ coulomb.}$$

$$W = V \times q = 6 \times 600 = 3600 \text{ joule.}$$



5- In the opposite circuit:

Reading of the ammeter was (3 Ampere) and reading of the voltmeter (15 volt) and when slider of the rheostat moves reading of ammeter becomes (9 ampere).



a) What happens to the length of wire of rheostat (with explaining)?

➤ The length of wire of rheostat decreases so the resistance decreases and the electric current intensity increases.

b) Calculate the potential difference between two terminals of the fixed resistance after change the rheostat.

➤ $R = \frac{V}{I} = \frac{15}{3} = 5 \text{ Ohm.}$

➤ $V_2 = I_2 \times R = 9 \times 5 = 45 \text{ volt.}$

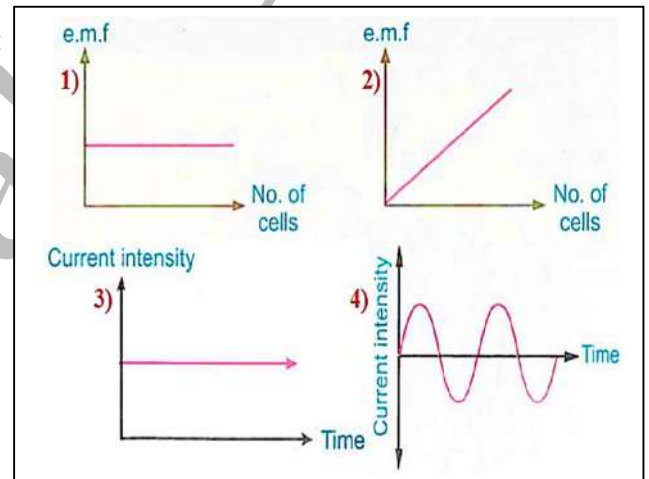
6- Study the following figures, then complete:

a) Figure (1) represents the connection of several similar cells in parallel.

b) Figure (2) represents the connection of several similar cells in series.

c) Figure (3) represents direct electric current that has constant intensity.

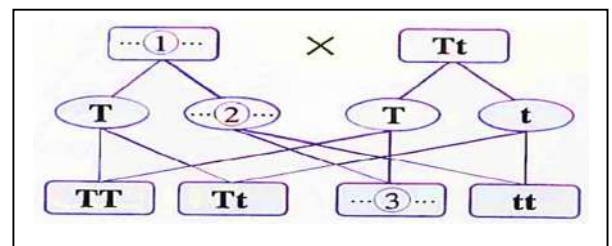
d) Figure (4) represents alternating electric current that has variable intensity and direction.



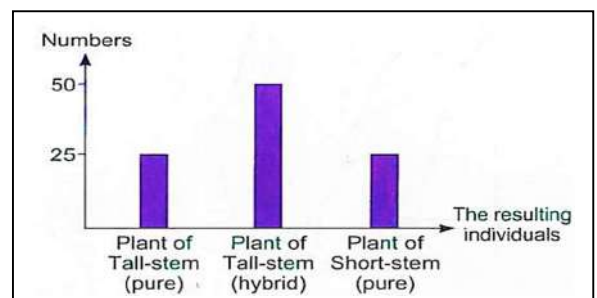
7- The following figure shows self-pollination between two pea plants of hybrid tall stem:

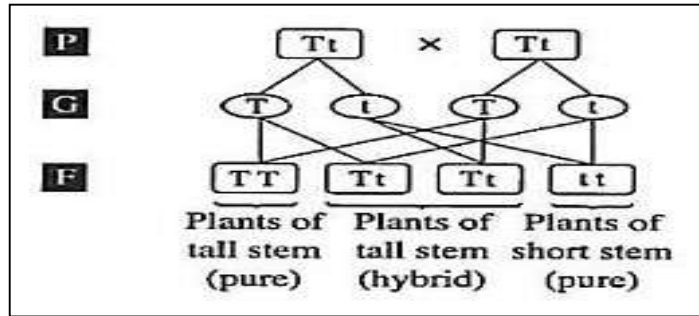
a) (1) Tt. (2) t. (3) Tt.

b) The ratio of produced generation is 3 (dominant trait) : 1 (recessive trait).



8- The opposite figure represents the numbers of the resulting individuals from the mating between two pea plants both of them are tall stem. Write genetic method to express this mating.





9- The opposite graph represents some changes in the level of glucose sugar in human blood.

a) What is the name of the hormone which:
Changes the state from (A) to (B)?

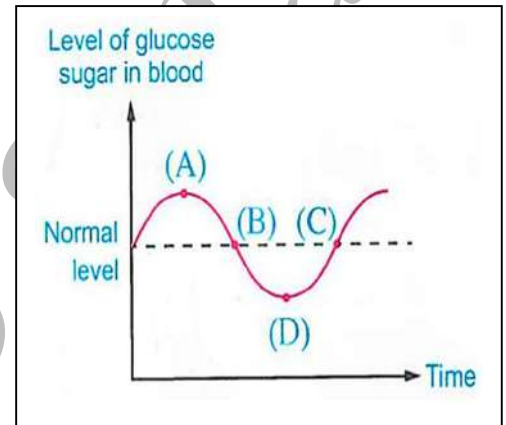
➤ Insulin hormone.

Changes the state from (D) to (C)?

➤ Glucagon hormone.

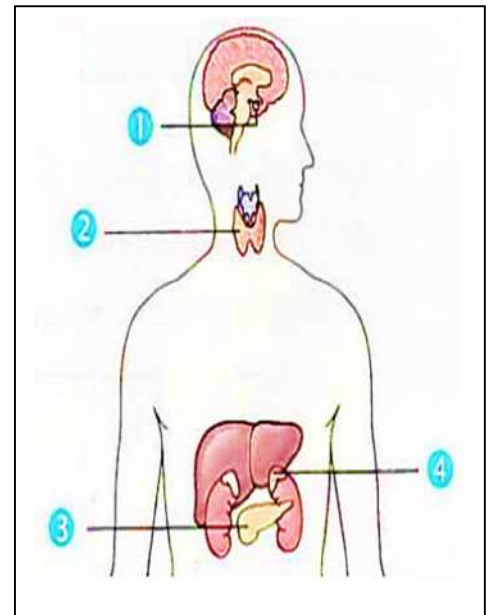
b) Which gland responsible for secretion of these hormones?

➤ Pancreas.



10- The following figure shows some endocrine glands in the human body, complete:

- The label (1) represents pituitary gland that is located below the brain and consists of two lobes.
- The label (2) represents thyroid gland which is located in the front surface of the neck.
- The label (3) represents pancreas gland which is located between the stomach and the small intestine.
- The label (4) represents adrenal gland which is located adhering to the top of each kidney.

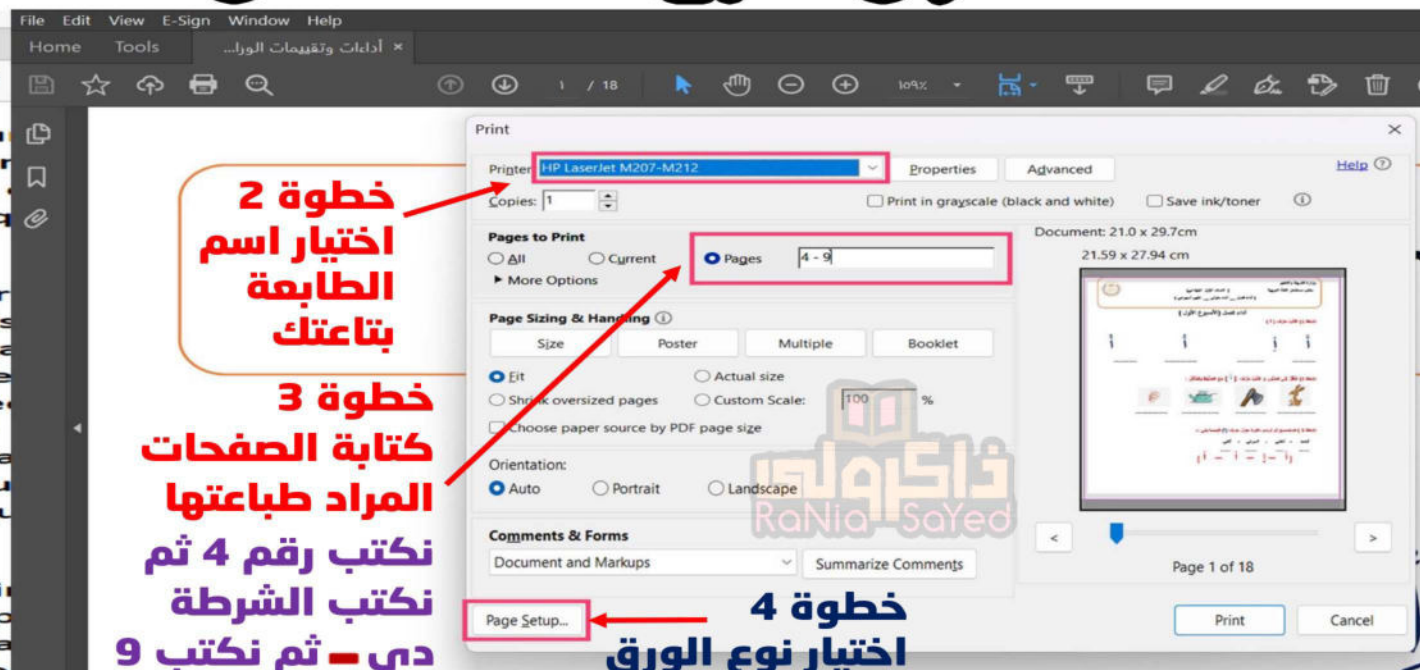


كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



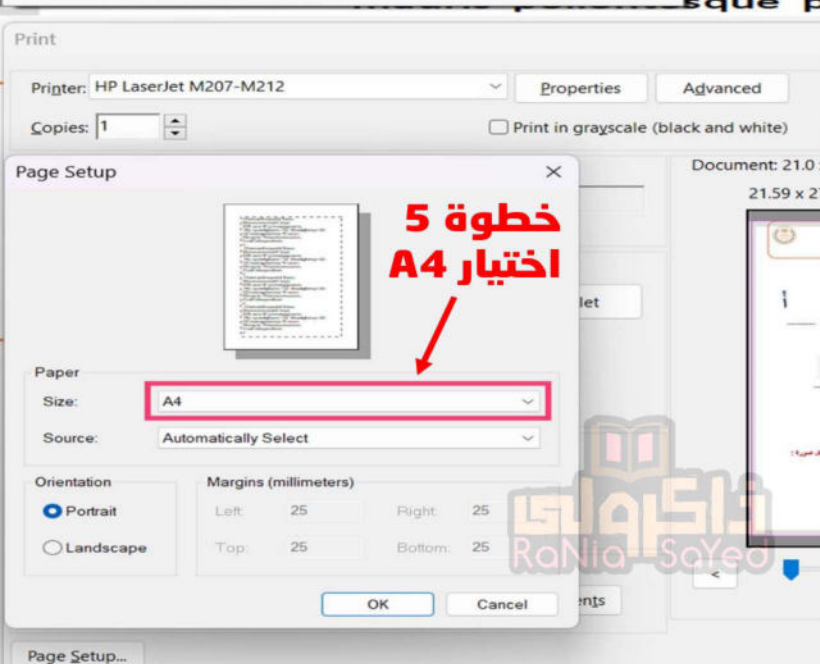
خطوة 1



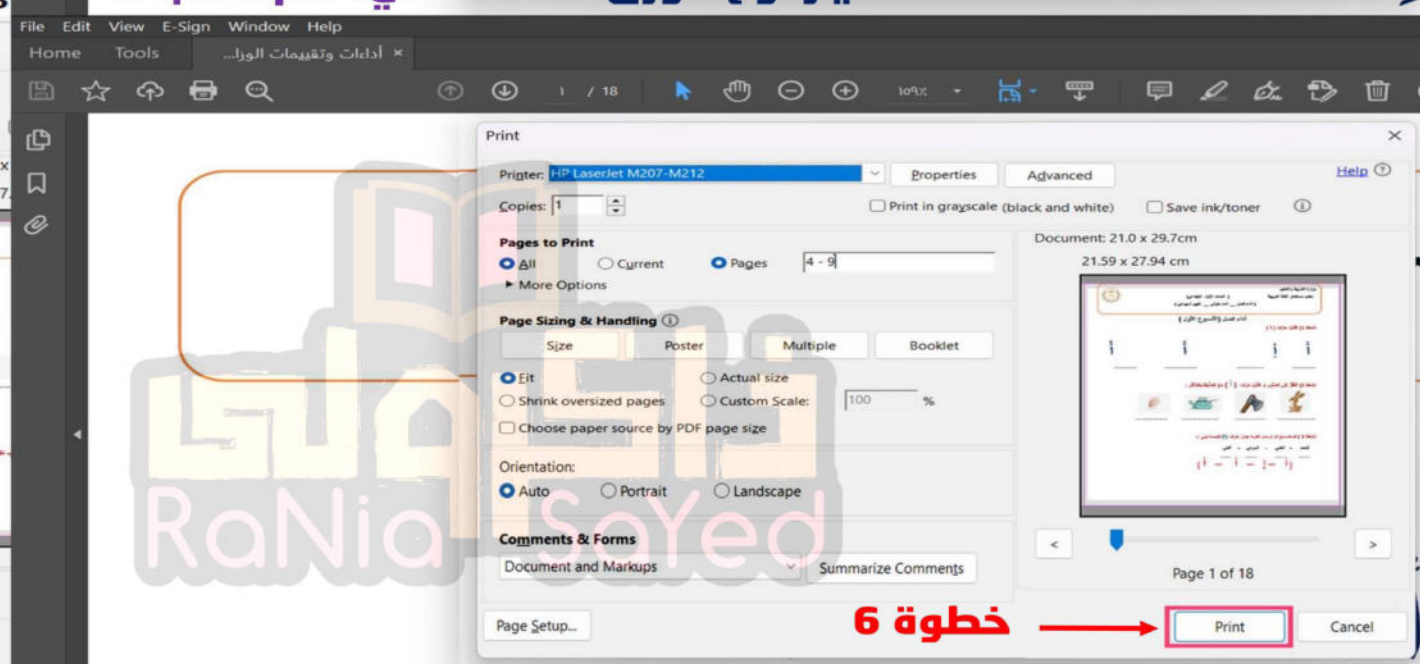
خطوة 2
اختيار اسم
الطابعة
بتاعتك

خطوة 3
كتابة الصفحات
المراد طباعتها
نكتب رقم 4 ثم
نكتب الشرطة
دي - ثم نكتب 9

خطوة 4
اختيار نوع الورق



خطوة 5
اختيار A4



خطوة 6